

BOSTON PUBLIC LIBRARY

3 9999 05291 231 6

PLEASE RETURN TO

GOVERNMENT DOCUMENTS DEPT.  
BOSTON PUBLIC LIBRARY  
700 Boylston Street  
Boston, MA 02117

# A Time to Choose:

## Summary Report on the Structure of Agriculture



DOCS

United States Department of Agriculture

Search  
Library

**Boston Public Library**

# **A Time to Choose:**

Summary Report on the  
Structure of Agriculture

GOVERNMENT DOCUMENTS  
BOSTON PUBLIC LIBRARY  
700 Boylston Street  
Boston, MA 02117

United States Department of Agriculture  
Washington, D.C.  
January 1981



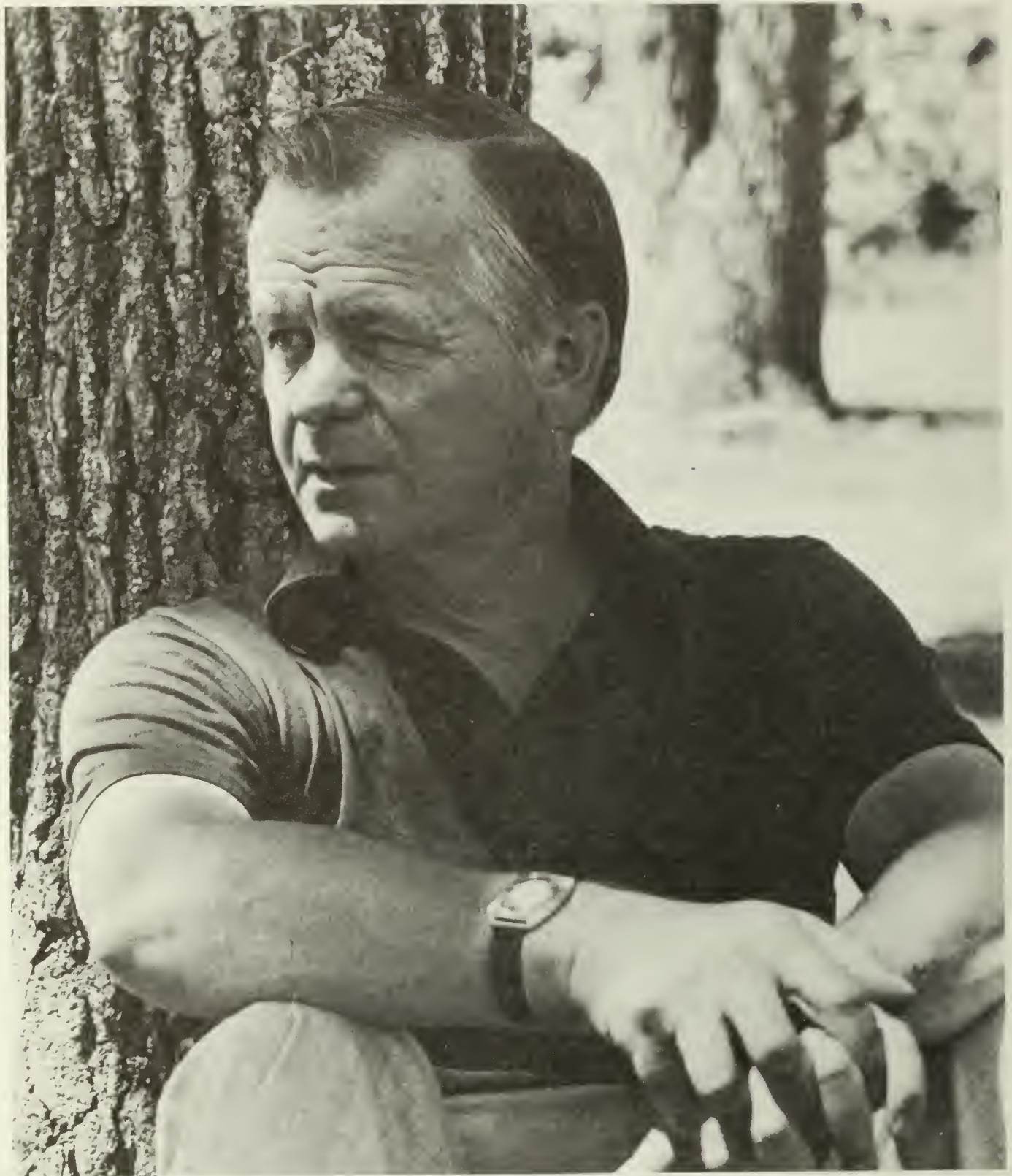
Digitized by the Internet Archive  
in 2014

<https://archive.org/details/timetochoosesumm00unit>



# TABLE OF CONTENTS

	<i>Page</i>
FOREWORD, by Bob Bergland .....	1
INTRODUCTION: Goals for Food Policy .....	14
PART I: AMERICAN AGRICULTURE AND ITS ENVIRONMENT .....	19
Chapter 1: The Global Context .....	22
Chapter 2: The Rural Context .....	30
Chapter 3: A Profile of American Agriculture .....	40
PART II: AREAS OF POLICY CONCERN .....	71
Chapter 4: Landownership .....	72
Chapter 5: Soil and Water Conservation .....	80
Chapter 6: Tax Policy .....	90
Chapter 7: Commodity Policy .....	100
Chapter 8: Credit Policy .....	112
Chapter 9: Public Research and Extension Policy .....	126
Chapter 10: Agricultural Labor .....	132
Chapter 11: Trade Policy .....	138
PART III: CONCLUSIONS AND RECOMMENDATIONS .....	141
BIBLIOGRAPHY .....	153
AUTHORS AND CONTRIBUTORS .....	164



## FOREWORD

I grew up on a farm that my grandfather bought eight years before I was born, just before the World War I “boom” broke. He, my father and my uncles worked that farm through those bad years.

At that time 27 percent of all Americans gainfully employed were farming.

I was eight when my grandfather died. By then, the farm was a third smaller than it had been originally, and what was left was divided five ways at his death.

On the national scene, the Supreme Court had invalidated the first Agricultural Adjustment Act, but Congress had quickly substituted another statute. That same year, the Commodity Exchange Act and the Rural Electrification Act were signed into law. President Roosevelt appointed a committee to address a chronic aspect of an already bleak farm portrait: the spread of farm tenancy.

By working in town, my parents were able to keep the farm, support us, and eventually buy out my aunts and uncles. With one of the first rural credit loans of the New Deal, they added 200 acres of prime land along the Roseau River.

When I left agricultural college in 1948, World War II and rationing of food and machinery were over; the Farmers Home Administration, basic authorities for the Agricultural Marketing Service and the national school lunch program were in place, and more than seven years of high Federal price supports were about to end. Farmers' equities had more than doubled in a decade.

In Washington, political, farm-organization, and church leaders were setting up or following through on a series of study commissions. They were concerned about agriculture's future. How could the Government help “family farms” get *big* enough to provide a family a decent living? How could agriculture as a whole be assured of a part of the postwar prosperity that almost everyone expected to come?

In 1950, I was able to buy my own 260-acre farm.

Across the farm belt, what we now call the “second agricultural revolution”—the skyrocketing advance of technology and of dreams—was underway.

Average farm size had grown from 175 acres to 213 acres in a decade, and the number of farms had declined from 6.4 million to 5.6 million, with two-thirds of the drop coming in the five years following the war. Of all Americans gainfully employed then, 12 percent were farming, and 28 percent of the farm families had cash incomes under \$1,000.

Of the nearly 15 million men, women, and children who would “leave the farm” in the next three decades, 7.4 million—48 percent—would leave in the 1950's.

Many of those who stayed would start moving out of pre-electricity rural isolation into the mainstream of the American middle class. Television, radio, and the mass media that began its own revolution during the war would start breaking down cultural barriers and attitudes into shared values and dreams faster than the interstate highway system could be built to help transform marketing. Commercial feeding of DES growth hormones to cattle began; the mechanical tomato harvester would be a reality by the end of the decade.

The Federal Government's agricultural attention would be concentrating on exports, including the new Food for Peace program, as a way out of surpluses, along with price supports and attempts to control production.

But technology raced ahead, productivity soared, and the surpluses became chronic.

At home, we kept our farm going with part-time jobs, and two winters of construction work in Florida.

In time, we changed from general farming to one main crop: grass seed. Research provided a strain that, after three years of experimentation, produced a good crop. I was able to buy my father's farm, again with the aid of a Government loan, and shifted away somewhat from specialization by planting timothy for export.

In 1961, I started to help direct some of the Federal farm programs as chairman of the Minnesota Agricultural Stabilization and Conservation Service.

At that time, less than eight percent of U.S. workers were in farming, and nearly 6 million persons would be leaving farms during the decade.

In 1963, we moved to Washington for five years while I worked as Midwest director of ASCS.

By 1964, the number of farms was below 3.5 million, and the average size was up to 332 acres, nearly double what it was before World War II started.

In 1970, I was elected to the U.S. House of Representatives from Minnesota's Seventh Congressional District, for what would become a six-year stint.

There were then 9.7 million persons in the farm population, living on 2.79 million farms. The average-size farm was 374 acres.

During my first year in Congress, the Food Stamp program was expanded to reach more of the needy. It had become a national program in 1964, about the time it was discovered that 30 percent of the 11 million rural citizens living in poverty were also living on farms.



Over the following years,

- The Animal and Plant Health Inspection Service was established in the Department of Agriculture.
- A Rural Development Service was created in USDA and the landmark Rural Development Act was adopted.
- Farm credit programs, initiated during Woodrow Wilson's administration, were updated.
- USDA lost the regulation of pesticides to the new Environmental Protection Agency.
- "Consumer" showed up in the title of a Federal farm bill for the first time, reflecting not only the urban dominance of the Congress but the fact that retail food prices in 1973 were rising at an annual rate of 14.5 percent. That act markedly increased the discretionary power of the Secretary of Agriculture to manage commodity programs to meet changing economic circumstances and directed him to encourage farmers to "produce to their fullest capabilities."
- Farm numbers continued to decline. By 1974, they were down to 2.7 million, and the average farm size was up to 388 acres. In the previous five years, every size category of farm had lost members except those under 10 acres and over 1,000 acres. Sixty-two percent of the farms were owned by persons who worked no other land. The proportion of full tenants was down to 11 percent—but probably due in large part to the mechanization of such crops as cotton, which took sharecroppers out of farming in the South. In between were many of the most prosperous, large-scale farms: about half their acreage owned, about half rented. The continued availability of irrigation water in the High Plains, and the control of publicly reclaimed water in California on farms far larger than the 160 acres set down in the original water-policy statute, were becoming major issues.
- With commodity futures trading rapidly moving toward \$1 trillion in transactions a year, a new independent agency was created to regulate the exchanges.
- The Food for Peace program was revamped, strict grain export-monitoring was put into effect, a five-year grain agreement with the Soviet Union was signed, and stringent new standards for weighing, grading and inspecting export grain were enacted.
- The Homestead Act of 1862 was repealed.

I remember those years now as one crisis after another, a seemingly endless debate on agricultural *bills*, with little or no discussion of agricultural *policy*.

As a farmer who had no choice but to roll with the punches—because that was our home, our land, and I wanted to keep it—I had always felt there had to be a better way to make farm policy and make the farm programs conform to that policy.

As a farm-program administrator, I still felt there had to be a better way.

After six years in Congress, I was absolutely convinced.

I was always troubled during those hours and hours of testimony and negotiation that we never seemed to get off the same familiar, circular tracks: the levels of price and income supports, the levels of exports, the constraints of the budget.

We didn't know who exactly was being helped or who was being hurt by the measure before us. The problems were seldom clearly defined. If they were, they were cast as narrow but immediate crises that needed patches quickly. Other than a dime a bushel here or a few pennies more a pound there, the remedies presented were either politically unacceptable or simply made no sense.

We thought—we hoped—that if we helped the major commercial farmers, who provided most of our food and fiber (and exerted most of the political pressure), the benefits would filter down to the intermediate-sized and then the smallest producers.

I was never convinced we were anywhere near the right track. We had symbols, slogans, and superficialities. We seldom had substance.

Soon after I was appointed Secretary, some thoughtful commentary in newspapers and magazines addressed the growing problems in agriculture in what was projected to become a "bust" year for many farmers. Reading these articles made me want to use my time as Secretary to try to move agricultural policy closer to that right track, wherever that was.

I knew from my own experience some of the older problems these editorials and articles discussed and, from talking to constituents and to my daughter and son-in-law, I also knew the symptoms of newer problems.

For example, after I was confirmed as Secretary, my daughter and her husband leased our 600-acre farm, and their situation helped me identify with the problems now faced by those trying to get a start in farming. Even if my wife and I had been interested in selling the farm, my daughter and son-in-law could not have made the interest payments on a fair market price out of the likely cash receipts. The value of the farm's assets had quadrupled since we bought the first 260 acres in 1950, and the demand for farmland continues to push up the price.

One neighbor with 1,800 acres is seeking more land for his two sons and can pay the price. A few miles down the road, the daughter of a German industrialist owns almost 17,000 farm acres. The pressure on land prices is not going to ease around Roseau, Minnesota, or any other farm-based community that I know about, anytime soon.

On the other hand, as tenants, my daughter and son-in-law can work fulltime at other jobs, put in twice as much time during the planting and harvest, and bring in gross receipts of \$100,000.



But this also raises questions about Federal farm policy. Where should we be directing our programs—credit, research, conservation, and technical assistance, not just income and price supports? Should we simply concentrate on overall production and export volume? Should we continue to ignore the role of off-farm income? How do we relieve the pressure on land prices, so out of proportion to the current income the land can return that new farmers find it almost impossible to bid on it? If we can find a way, should we?

As Secretary, I wanted to take up these central concerns. But, first, we had a farmer-owned grain reserve to put into place, as a start toward halting the plummeting grain prices and stabilizing markets, and there was a new farm bill to be developed.

The 1977 farm act was nine months in the making. It was and still is the most comprehensive assembly of elements for a national food and agricultural policy ever enacted in a single piece of legislation. The reserve program was endorsed; income-supplement levels were geared more closely to the costs of producing the commodity; benefits rigidly allocated by outdated acreage allotments were replaced by a system basing them on what was actually planted. All were features designed to provide producers with more latitude in decision-making, along with rewards for responsible risk management.

A new organizational structure was established to help redirect research and education, and the food stamp program was totally revamped, with eligibility for those benefits narrowed but access to them eased, a relief to millions of the rural poor.

And, during the final steps of the legislative process, a provision was added reaffirming what was called a “historical policy” of encouraging the family farm system, for the social well-being of the Nation and a competitive environment in food and fiber production. A “family farm” was not defined, and, the Congress stated, programs should not be exclusively administered for the benefit of family farms.

As good for farming as the 1977 farm act was, it still basically approached agriculture as if all farmers were alike, had the same problems, received the same benefits from the programs, and should be assisted on the basis of farm-unit production rather than per-person need. By and large, it failed to recognize any special problems of farms of different sizes or organization or experience, bought under different economic circumstances in different places.

At its heart, the directions in American agriculture with which the 1977 act was concerned were the direction of unit prices of supported commodities and the magnitude of budget expenditures. Averages and the dictates of the legislative calendar were still the principal guideposts.

There had to be a better way.

By 1978, the farm population—using the same standard for previous years—was down from 1970 to 8.01 million persons, a decline of 1.7 million but still the smallest eight-year decline since the end of World War II.

They lived on fewer than 2.5 million farms and represented less than four percent of the population. The largest 20 percent of those farms *by sales* accounted for four out of every five dollars worth of food and fiber produced. Several hundred of these farms were selling more than \$10 million worth of products a year. Many of the smallest farms were homesites for families living reasonably well on a combination of farm and nonfarm income. Respected observers, however, were pointing to pressures on the “disappearing middle,” the group of medium-sized places between the big operations and the part-time farms.

Our larger farms—almost entirely operated by families—have given us the most abundant, efficiently produced supply of food in recorded history, at relatively low prices. Whenever I wondered aloud if we were on the right policy and program track, I was pointedly reminded that abundance is the main objective of the system, that this had been the goal of farm legislation for 50 years. But what had happened to our farm system along the way?

The success of our agriculture is true, but it is also true that, by 1978, about 7.7 percent of the households in America owned all the farm and ranch land. Of those households, 62,260—the population of a medium-sized city—owned three of every 10 acres. How did this come about, in a Nation that came into being with one of its principles being the widespread ownership of property? Ownership of property is still one of Americans’ most cherished dreams, but this was dramatic evidence that few were achieving it, if their dream involved farmland.

What is more, about 70 percent of those who owned farmland in 1978 were over 50 years old. That land will be changing hands in the next 20 or 30 years, so now is the time when we should be thinking hard about the directions in which we want to go.

It was clear to me that fundamental shifts were underway in the agriculture that has been my whole life.

There had to be a way to move toward a policy that has a clear, honestly stated purpose and direction, and away from programs fashioned by events and circumstances and then labelled “policy.”

Farming had become an enormously more complicated business since Helen and I bought our farm in Roseau 30 years ago. Yet policymakers—and that includes the representatives of the general farm organizations, as well as elected and appointed officials—were making decisions without a clear, overall focus or goal, without an eye to the future.

As I was considering different ways to address this problem, I became acutely conscious of how many others shared my concerns.

All of us who cared about the future of American agriculture, I was convinced, had to stop living inside the clichés of our own making, and start facing the serious but imperfect choices that were presenting themselves. In short, we had to think creatively.

Many of the changes I saw occurring in agriculture were changes in the structure of agriculture.

These days, economists tend to use the concept of “structure” most. It’s not a mysterious concept, although it has widely different meanings to different people. In essence, it is the basic characteristics of a system—those that embody economic, social, and political goals and values.

The introduction to this report sets out many of the factors involved in structure. I decided that studying the structure of agriculture would be the most useful way to find some of the answers to the concerns about modern agriculture that were troubling me and so many other Americans.

For years, even decades, policymakers—myself included—had concentrated most of our attention and efforts on the whole, the big numbers: total production, total exports, total income, and national averages. It seemed the right time to take a closer look at what is going on behind the totals and averages, where individual persons are living their daily lives under the influence of all those larger forces.

In March of 1979, I was invited to address the annual convention of the National Farmers Union in Kansas City. I used that occasion to call for a national dialogue on the structure of American agriculture—*how* and *why* it developed the way it has; whether this is what farmers and the general public want; if not, whether the Government should help the citizens involved try to effect changes, and, if so, how it should go about this.

That fall, I conducted all-day public meetings in 10 regions of the country—outside the sometimes-inhibiting atmosphere of Washington and within reach of the farmers, rural residents, consumers, business men and women, clerics, and others I wanted to hear from directly. Thousands attended. What I didn’t hear from the panelists or the audience during the meetings, I usually heard over the table at lunch.

Thousands of other citizens wrote about their experiences in farming, of trying to break in, of feeling forced out. Some sent us books or theses. By mid-winter 1980, we had more than 10,000 pages to digest, not counting the books.

I was gratified to see that verbal adversaries within the farm organizations and on the cutting edge of farmer-consumer debates were speaking to each other (some for the first time), sharing their concerns, searching for common ground in the larger issues.

I was just as pleased to learn that, during the six months before the meetings began, scholars, churches, state and regional farm and rural organizations had their interest in structural issues sparked or renewed with an enthusiasm not seen for 25 years.





As I expected, we found there were many more questions than answers. Certain questions some people didn't even want asked. But the meetings did confirm a widespread desire to learn more about agriculture and its structure, to try to find, if not the answers, at least the right questions.

I made this study a top-priority project at the Department and named a staff to organize our efforts. Drawing in part on the meetings, we established an agenda of research for the Department's experts and those in colleges and universities. This agenda was designed to take us closer to the basic structural questions I felt had to be answered to bring direction to policy. A great deal of new research was undertaken, and some on-going research was redirected into these areas.

Some of the hard questions could be faced in the process of framing the next farm bill, due to be enacted in 1981. The Structure of Agriculture Project could frame the broader concepts and questions that will have to be faced down the road.

The staff, and the independent consultants I brought in, were told that no subject was to be considered off limits. If the Federal tax code affected the structure of agriculture, for example, I wanted it explored.

They and I operated with only three preconceived notions:

- First, that American agriculture and the world of which it is a part had changed fundamentally since the basics of our principal policies and programs were developed, and our programs and policies probably had not kept pace with or wholly reflected those fundamental changes.
- Second, that many of the fundamental beliefs and values Americans of all backgrounds have shared and passed down to the next generation for centuries have not changed, but the purposes and goals derived from them in particular circumstances might have become either blurred or less relevant to the new circumstances.
- And, third, that through its policies and programs the Federal Government, from the time of its inception, might have had a substantial influence on the direction and force of structural change in American agriculture.

The research was undertaken to establish *what* was happening and *why*, what the true problems were as a result, and what the likely needs of agriculture would be in the future.

In the spring of 1980, with some results of our research starting to come in, I spent three days in Washington listening to the views of the leaders of national organizations, respected economists, and governors on the central issues which had surfaced in the regional meetings.

During the following months, three particularly difficult problems were addressed as spin-offs from the Structure Project:

- A group of public advisers and Department officials were concentrating on that portion of the regular research program that involves increased mechanization of agricultural activities in order to establish guidelines by which the Department could be certain it was using public funds to serve the public interest as a whole.
- A small group of officials inside the Department was studying the problems smaller-scale farmers are encountering in trying to directly break into their local and regional food markets with their commodities.
- A working group of large-scale growers, farmworkers, and expert consultants was "brainstorming" to discover and publicize within agriculture the innovative methods in use to try to resolve age-old labor-management problems in agriculture, while defining for us the problems that result from Federal policies.

Additionally, the project staff last fall conducted a seminar on tax issues to discuss the problems uncovered in the research and to explore the possible effects of tax-code changes that seemed worth considering.

The research and the issues raised at the public meetings were, on the surface, more oriented to economics than to anything else. But these issues, as everyone involved was aware, are intimately woven together with our basic beliefs and values as Americans.

As John Carlin, the Governor of Kansas, testified on the first day of the Washington, D.C., meeting, the choices we make in agricultural policy in the years immediately ahead "are constrained by the basic values that we as Americans share." Among the values he cited were freedom of choice and recognition of the right of private property.

There are more than that. During the first week of the regional meetings, a farming grandmother from Frankfort, Ky., tried to put some of these others into words. Phyllis Rambo has been in this business seven years longer than I have and has grandchildren farming—or leaving the farm for town. Hers seems to have been a good life, but a hard one, too. I asked her why she stayed with it.

"Well, we stayed with farming because we like farming. We like the ground. We like the dirt. We like to grow things. We like to see things grow. Then, we're our own boss. We can quit in the middle of the day, if we want to. We can work until midnight if we want to, and it's a free life and a good life. It's working hand-in-hand with our Maker. . . . I think contentment of heart goes a long way in lifting up the social life of our world and being happy with what you have and not reaching out and grasping for being a millionaire, and counting your blessings, living with your family, and appreciating good things."

Mrs. Rambo said a lot in those few words. There is, indeed, much more to farming than the business of growing things for market. There are deep personal feelings and values like those she expressed.



But there is more to this than *personal* values. At the first meeting, in Montpelier, Dick Wood of Freeport, Maine, a farmer for 25 years now, talked about all the farmland that will change hands soon and about the changes we've seen in agriculture since the end of World War II. And then he reminded us of the positive political value of having a broad array of farmers, of having the freedom to choose to go into farming if you're willing and qualified, and of having the sort of clearly seen roots that farming gives a person. He closed his testimony this way: "As we consider the structure of our agriculture, remember that we are dealing with the shape of our democracy."

So, in addition to respecting our American belief in private property and the freedom of choice that Governor Carlin mentioned, other basic goals for our society must guide us, and other beliefs must be respected. These include:

- Belief in the equal dignity and worth of all.
- Rewarding the striving for excellence as long as it is not at the expense of others' dignity and survival.
- Promoting access to opportunity, and equity in the distribution of resources, rewards, and burdens.
- Cooperation and shared responsibility.

Those precepts were nurtured during the two centuries after the first colonists arrived, two centuries during which what became the United States was predominantly agricultural. I believe they still flourish today.

Their roots in that agricultural era are a principal reason why Americans today value farming as a way of life, as well as a business. Those beliefs and values are the common property of city dwellers, suburbanites, and rural residents alike.

They must be the basic guideposts of our policy. But even if a clear connection can be established and maintained between policy and the purposes expressed in our beliefs, that does not mean the choices among various courses of action will be easy. In fact, using such a framework for policymaking will probably mean that decisions will focus on a continuous series of adjustments in policies and programs, rather than on selecting one course from two or three alternatives and waiting a number of years to review the decision. That will require a greater willingness to admit error than I have seen in my years in Washington.

Decisions on public policy will undoubtedly continue to be influenced by immediate economic conditions and needs, but they will have to reflect all the other policies and purposes we embrace and pursue as a Nation, too.

Such choices among values and beliefs, under the pressure of economic forces, present themselves throughout society today. The issues raised during the Structure Project were stated in the vocabulary of agriculture, but nearly all can be paralleled in the concerns expressed daily by a wide range of Americans. It could scarcely be otherwise, considering our shared body of beliefs and values.

The following document describes what we have learned through the Structure Project. Some of the questions we had in mind when fashioning the research agenda could not be answered, because the forces are still moving so rapidly that much remains unresolved, because the study methods in existence today cannot reach to those issues, or because there was not enough time for thorough study.

With this report, nonetheless, we hope that we show clearly the paths that must be more thoroughly explored and the points where reinforcement is necessary if the diverse agricultural system that the public wants, and the flexible, equitable system our country needs, are to be maintained. We hope it will constitute a national policy agenda for food and agriculture in the 1980's and beyond.

The underlying issue explored in this report is the question of control. Who controls the land and, in turn, our food supply, by default or by design? Who controls the prices and access at each step of the food system? How do we help individuals control their own lives amidst the ambiguity and uncertainty that we all must face?

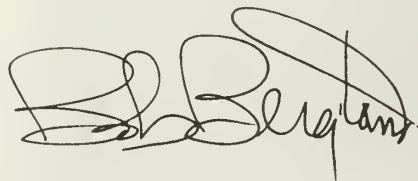
This report is extensive but necessarily incomplete; time would allow no more. But I believe that its findings are meaningful and cannot be ignored by anyone who cares about American agriculture.

I do not expect ready, wholehearted agreement with all our findings and recommendations; it will take time for all of us to better understand the new realities. But I do believe that the project will prove to be an important beginning, a step toward a better approach to agricultural policy.

I want to leave with one more thought. This exercise has convinced me, in a way few other experiences in public life have, that the adversary relations we have used for so long to forge public policy need tempering. The persons who care need to be talking to each other, not at each other.

The late Hubert H. Humphrey, a mentor and friend, put it best, when he said during another period of national stock-taking:

"We need each other, now more than ever."

A handwritten signature in black ink, appearing to read "Bob Bergland". The signature is stylized with large, sweeping loops and a long, horizontal stroke at the bottom.

BOB BERGLAND

Washington, D.C.  
January 1981







# INTRODUCTION

American agriculture has changed in this century—radically in some ways—and especially since the end of World War II, the last time its status and future were closely examined by the Government. It is not what it used to be, much less what we thought it used to be.

Such a change was not totally unexpected. Yet a number of persons close to agriculture and the Federal programs associated with it have observed in recent years that this massive change—and the prospect for another period of sustained, dramatic change in the immediate future—has been neither obvious to all policymakers nor accepted by many of them.

As a result, these observers have concluded, Federal food and agricultural policy has not kept pace with, anticipated, or reflected the changed nature of farming in the United States; it is in danger of failing either those who live on farms and produce our food or the larger public interest, or both.

The Structure of Agriculture Project was initiated in March 1979 by Secretary of Agriculture Bob Bergland to research current structural issues, to determine the impacts of current market forces and policy on agriculture, and to recommend policy alternatives. This is the summary report of the project. Highlights of the research initiated are incorporated here.

Much of the research is reflected in Part I. This section describes the new global and rural contexts in which American agriculture functions and the characteristics of farmers and their operations, and analyzes the general implications of these new realities for public policy.

Part II details more specific areas of policy concern—land-ownership, soil and water conservation, tax policy, commodity policy, credit policy, research and extension, agricultural labor and international trade—which grew out of the research agenda and from the 10 regional and 4 national public meetings conducted in conjunction with the project.

The project's broader conclusions with recommendations for policy are contained in Part III.

## Structure: What and Why

In addition to the economic contexts in which American agriculture must be viewed today, this report must also be read in a philosophical context. The concept of structure with which we worked is broad. It involves:

- How farms of different sizes, commodities, incomes, assets, and locations organize their natural, financial, labor, and other resources.

- Who controls, manages and/or operates those farms, and by what means—including the degrees and kinds of separation among ownership, management, operation and labor functions.

- The degree of freedom of choice enjoyed—and the degree, source, and kinds of risk faced—by those who control, manage, and operate those farms.

- The distribution of wealth among the persons contributing to production on our farms, and the distribution of income associated with this wealth.

- The ways in which those farmers secure the inputs, including capital, they need to produce and market their products.

- The requirements for entering farming as an occupation, and the relative ability of those entering to meet those requirements.

- The means used to transfer the farms to a new generation, the effects of different types of transfers on the individual unit and the make-up of farming as a whole—locally, regionally, and nationally.

- The effects of different types of agricultural organizations and techniques on natural resources.

- The performance of the food system in providing the quantity and quality of food sought by consumers.

- The ability of the entire food system to withstand shock, to adapt to changing technology and economic circumstances, and to respond to changes in consumer preferences.

- How the system, in all its components, meets objectives the American people set for themselves as a society.

As that list indicates, practical economics, while indispensable to the structural concept used, was just a starting point. Examination of structure allowed us to observe not only the responses of the food and agricultural system to economic and political forces, but also its accordance with American beliefs and values.

Our food and agricultural policy has never had an explicit structural pillar, although legislation and position papers referred to “family farms” as the type of farm firm to be encouraged. This report is intended to demonstrate that, because of the changed realities in agriculture, food and agricultural policymakers should now consciously focus on the structural effects of their decisions.

But guideposts are needed. The research behind this report suggests that a number of structural patterns can be comparably efficient and productive. Some additional standards are needed if a conscious structural policy is to have any meaning or purpose. Those criteria are found in the goals, the ideals, that the people set for food and agricultural policy and express through their hopes and their dissatisfactions with present courses.

Most would agree that the American people share four straightforward objectives with respect to agricultural and food policy: a stable, prosperous farming sector; an abundant, nutritious supply of food available at reasonable prices; support for and maintenance of a resilient, equitable farm structure, and capacity to contribute to the realization of a peaceful, productive world.

Yet, stated so broadly, those objectives are not fully useful in developing policy. We need to look behind them, apply them to situations, and try then to develop a framework of more specific goals to guide us.

For example, some might wonder why we do not, as a matter of course, use the term "family farm" in this report. The term is a broad label. Persons of all backgrounds and ambitions use it to describe their situation. The American people generally regard it as a positive symbol.

Over the years, policymakers, economists, sociologists, and many others have attempted to define the "family farm" to use it as a program-directing tool. The testimony at the public meetings reaffirmed previous findings that broad agreement on a definition of "family farm"—by acreage, income, sales, legal form, or any other readily available measurement—is impossible for the purpose of economic and policy analysis and perhaps for program implementation also. Nearly every organization and individual farmer has a different definition. But the *ideas* behind the symbol, the *values* attached to it, reflect many, if not most, of the goals Americans of all occupations and backgrounds seek in a food and agricultural policy.

### Goals for Food Policy

Policy goals provide a set of criteria and principles by which all can measure how well the system is working, where improvements need to be made, and whether a change in public policy or involvement could bring about those improvements.

In the absence of a set of principles agreed upon by all the actors who have legitimate (if frequently competing) interests, decisions will be made on an *ad hoc* and narrow basis. The arbitrators may be more familiar with one party's interests than another's, or the principles endorsed by one group may be unrealistic, considering the interests of another equally concerned and equally powerful group.

The purpose of this introduction is to provide a policy context and criteria for examining the issues explored in Part II, in the context of the new realities described and analyzed in Part I.

There are several fundamental, partly overlapping goals the public of any nation expects the food economy to try to achieve.

---

*"The family farm is democracy and free enterprise at its best, a family running and working a business together, working together to produce food and fiber. . . . The family farm is not the agribusinessman in town, the lawyer at the courthouse, the doctor at the hospital, the professional man in his office. He is not people looking for a farm to buy as a hedge against inflation, nor the person looking for ways to reduce his income tax while making a safe investment. This group also includes the multinational corporations, food-processing industries and vertical integrators."*

**William C. Beach of Oak City, N.C., at the Fayetteville meeting.**

*"Some Americans see the small family farm as an economically insignificant reminder of an outdated, romanticized way of life. But the public's preference is for 'a country which has a relatively large number of small farms'. . . . Significantly, there is a broad-based consensus on this issue, with strong support for the small family farm in evidence in every region of the country and in every significant demographic subgroup of the population. . . ."*

**Louis Harris & Associates, in a report to the Department on a 1979 survey.**

---

The first relates to the *nutritional well-being* of the people. This means that the food supply should be maintained, that food should be nutritious, and that food should be available to all. Price considerations, although part of this goal, are not easily defined. For example, approximately 20 million Americans, or about one-tenth of the population, who do not have sufficient incomes to secure an adequate diet, participate in the food stamp program; at least another 4 million have incomes below the poverty line. But the question of price has been, and will continue to be, a major political concern, buttressed by the food economy's serious, direct impacts on the overall inflation rate. Programs to ensure food safety and quality also reflect this goal.

Our agriculture is becoming more internationalized and our supplies and prices more closely linked with other nations, many of which are not able to feed themselves. As this happens, questions of long-term food abundance, the security of the food supply, and price become more complex. If global demands on the United States continue to grow, coupled with growing costs for energy and other resources, the continued abundance of food at low prices may be threatened. There is evidence that increases in food prices over the next decade may be considerable. The issue of achieving security in the face of greater world price-and-supply fluctuations is also a concern.



A second basic goal embodied in agricultural policy is a *reasonable level of income for farmers*, the actual producers of food and fiber. Many traditional agricultural programs and their costs have been justified partly because they provide a secure supply of abundant, nutritious food. But concern for farmers' incomes is a legitimate and separate goal. Farmers, like others in business, must earn a decent income to stay in farming. Few enterprises are as capital-intensive as farming or so vulnerable to cash-flow fluctuations. Policies for price and income support and for risk-sharing, to help maintain a viable farm sector, are part of the income issue.

As a different structure of agriculture evolves, with a relatively small number of larger farmers who produce most of our food and fiber and do not have low incomes, the question of keeping farming an attractive occupation, with competitive returns, will be an important part of food-security and farm-income concerns. The means of achieving this, and Government's role, may be different than in the past. More distinctions might be made, for example, among the various business risks, and different judgments may result as to which risks the public should share.

A third goal for the food economy, and one which attracted much comment and many different ideas, is *equity*. Despite concern about Government involvement, a frequently expressed attitude of persons at Structure Project meetings was that Government involvement in the economy is needed to protect those with less power from larger and more powerful persons and institutions. The issue is distribution of power. Farmers feel, with some justification, that their survival depends on redress of the imbalance of power between themselves and the surrounding industry on both sides: their suppliers and their buyers.

The overall need for adequate returns to producers has already been mentioned. But, that is not the limit of concern when it comes to adequate and competitive levels of returns to persons, organizations, and resources involved in an efficient food system.

Hired farmworkers, workers throughout food processing, distribution and marketing, and investors who provide capital should all earn a fair share of competitive returns. In the abstract, this goal of equity is hardly controversial; achieving it is necessary to assure the well-being of significant segments of the population and the future flow of resources to the food system.

The particular level of returns, their derivation, and their distribution among the various persons involved in the food economy—from different-sized farmers in different regions to industrial workers and employers—are issues of constant debate.

A related but distinct concern over the years is shown in farmers' support for policies and programs designed to assure fair practices by all sides in the market. These include accurate weights and measures, truthful labeling and product information, and fair pricing and payments practices. A corollary concern is access for all to information about markets. Although the specifics are controversial, providing information on which farmers, consumers, and other participants in the food industry can base well-informed choices is an important part of equity in the food system.

Another goal is *independence or self-determination*. This goal is entwined with our basic cultural self-definitions. Those in agriculture, like many others in business, value independent management and freedom. Farmers have always expressed strong support for policies that give them decision-making flexibility and freedom to manage their operations. Such policies benefit the whole of society because they promote initiative and enterprise.

Farmers sometimes demonstrate a willingness to compromise on this goal to achieve other purposes, such as higher prices and incomes, more stable prices, and more orderly markets. Nonfarmers' support for this goal is tempered when they feel that their short- or long-term interests—in food quality or environmental quality, for example—are infringed upon. For workers, consumers and others, maximum freedom of choice is also a key consideration.

A longtime major goal for the food and agricultural economy is *efficiency*. Despite a relative abundance of good land and other productive resources, Americans are coming to realize two things: first, that those resources are not without limits; and, second, that, as we approach those limits, prices and costs may rise rapidly. If the market functions properly, these developments should cause people to use the resources more judiciously or seek alternate ways to accomplish their tasks.

Standards of efficiency and competition also are applied to the food-distribution structure. Increased attention has been paid over the last two decades to the structure and organization of the food industry. From a food-policy perspective, it is important to assure not only a healthy, viable food production system but also one that delivers wholesome and safe food at reasonable prices. That can be assured only if no firm or group of firms possesses sufficient power to manipulate supplies or prices. Full efficiency also requires the absence of unnecessary constraints—rules, regulations, or institutions—that hinder the flow of food or services or stifle technological or institutional innovations, but this requirement is often modified to serve other goals.

One added aspect of efficiency is the extent and cost of Government involvement. It is inefficient, for example, to use Government money to pay for something that the marketplace can handle or to encourage a farm sector that is highly dependent on subsidies.

Clearly, efficiency is one of those goals to be pursued within the context of other goals.

Another goal for agriculture is *resilience under stress* and *flexibility* for the future. Historically, resiliency within the farm sector is due to farmers' dependence on farm resources—especially the family's own labor—for which low returns could be accepted in hard times.

This is no longer an acceptable concept of flexibility. However, the ability to change crops and change the mix of inputs and output in response to economic changes will be crucial in the future. For example, considerable price instability probably will result in shifts in consumer tastes. The same concern applies across the food system where a few large firms—and ultimately our food security—might be vulnerable to economic stress.

A related but distinct goal of food and agricultural policy is *conservation of resources* and *protection of the environment*. In this context, most attention has been given to conserving land and water and, more recently, energy resources. While the day-to-day aspects of conservation are probably embodied in any enlightened definition of efficiency, there is, in fact, a constant tug-of-war in agriculture and other industries between the long- and short-term. This goal has implications for our longer-term food security, for trade, and for many other decisions.

*Assured opportunity* is a forerunner of many of the other goals. Access and equity, for example, are what opportunity is all about. Efficiency, resiliency, or any other goal for a food system cannot be achieved if the barriers to entering farming—whether for young people or others without experience—are insurmountable, or if farmers' access to markets is circumscribed by factors over which they have no influence.

Opportunity extends beyond the circumstances of an individual producer or would-be producer. An important standard of judgment for any industry is the extent to which it provides employment opportunities for *both* workers and entrepreneurs.

---

*"You can't get social directions or moral prescriptions from the data.*

*"You can tell when you're reaching a historical watershed, because you find yourself going beyond the technical questions to right and wrong, good and bad. Why are we doing this? For whom? What are the implications for our children and our grandchildren?"*

*—Economist Hazel Henderson, in Omni, 1980.*

---

The final and most comprehensive goal of food policy should be relative *consistency with other objectives of our society*. While there will always be a need to allocate limited resources to a variety of purposes, there should be as much consistency as possible among all social and economic goals.

\* \* \*

Nutritional well-being, a reasonable level of farm income, efficiency, equity, independence, opportunity, resilience, conservation, and consistency with the rest of public policy—these nine commonly expressed and widely accepted objectives for American agriculture do not directly address the question: "What form, what manner of agriculture do we want for the future?"

That may be just as well, since it is unlikely that widespread agreement could be reached on a specific number, size, and configuration of farms for the United States. Nevertheless, no individual or collective judgments can be made about the form and manner of our agriculture without reference to these goals. They have structural implications, as the report will show, and any structural policy must be consistent with overall food and agricultural policy and goals to be accepted and supported.

This framework of goals was presented here to show the spirit in which this report was shaped, as it first examines the context in which agriculture today functions and the characteristics of that agriculture, and then explores specific structural aspects of major concern to a new food and agricultural policy.



# **PART I AMERICAN AGRICULTURE AND ITS ENVIRONMENT**

**The Global Context**

**The Rural Context**

**A Profile of American  
Agriculture**



For more than five decades, agriculture in the United States was viewed as having virtually limitless potential.

At times, it was operating perhaps as much as 25 percent below its capacity. While millions went hungry, the world marketing system was such that, at existing prices, this hunger could not be translated into sufficient effective demand to avoid the accumulation of surpluses as fast as farmers harvested them.

Now, it has become accepted by many that American agriculture has entered an era of limits and critical choices, requiring significant adjustments in the use of our resources.

Shifts within our agricultural system, a surge in demand from abroad, and policies that fostered prices consistent with supply and demand conditions changed U.S. agriculture from a sector with surplus resources and production into one with production and demand more closely in balance and with resources more fully used.

This closer balance means that any adjustments in markets and production resources have potentially far greater implications than in the earlier era of large stocks and significant acreage held out of production.

The interlocking complexities of modern agriculture's environment mean that an unanticipated shift in one element—weather or the cost or supply of a key factor in production, such as petroleum—can reverberate throughout the world, causing widespread disruption in prices, supplies, and market activities.

It is important to understand from the outset, then, that American agriculture's new "equilibrium" does not mean *stability*.

Largely because of this fact, the public interest in agriculture has broadened from the traditional two-pronged concern of equitable returns to farmers and adequate supplies of food at affordable prices.

To fully appreciate the new concerns, as well as the changed context in which the more traditional interests must now be viewed, it is necessary to first review the developments of the 1970's and to look ahead for the rest of this century—to present the global context in which the structure of our agriculture will have to function.

The more immediate context in which farmers, farmworkers, and their families live and work—rural America—also has changed. It, too, must be sketched before the ramifications of change can be fully appreciated.

Then we will profile that structure as it stands today—the resources and the people and institutions that influence how the resources are used, the people and institutions that *are* agriculture.







Growth in foreign demand for U.S. food, feed, and fiber since the end of World War II could not have been more striking. It may well prove to be as important a catalyst of change in our agriculture as the “closing” of the frontier in 1890.

American agriculture had, by the end of the 1970's, become truly internationalized. Exports accounted for only 10 percent of all farm products marketed and 1 of every 5.5 acres planted in the 1950's. By the end of the 1970's, exports were 30 percent of the farmers' marketings, equivalent to 1 of every 3.5 acres planted.

In varying degrees, the level and variability of farmers' incomes have become increasingly dependent on those sales. What farmers buy, how much more land they seek, the way they mix their capital, labor and production resources—all these decisions have come to depend significantly on supply and demand for their crops around the world.

### Food and Agriculture Trends

The last three decades were a period of strong growth in world food production and unprecedented gains in consumption.

Record-breaking population increases, greater affluence, and declining *real* prices (after subtracting the effects of inflation) all combined to generate an average annual increase in foreign demand of 2.9 percent—more than twice the average for the first half of this century. At the same time, agricultural production abroad grew at an annual average rate of 2.8 percent—thanks to the commitment of more resources to food production, gains in productivity, and, over all, favorable weather.

By the end of the 1970's, world per capita food supplies exceeded by 8 percent the minimum caloric intake recommended by the Food and Agriculture Organization of the United Nations. In the early 1950's, intake averaged slightly below the minimum. Much of the uneven distribution of growth in food production and demand among individual countries was offset by trade. Trade in agricultural products expanded at roughly twice the rate of growth in consumption.

But, while impressive in the aggregate, these strong global gains in production, consumption, and trade bypassed large numbers of persons in poor countries and many of the poor in the more affluent countries. The number of malnourished people worldwide quite likely increased from 100 to 200 million in 1950 to more than 500 million at the end of the 1970's.

Grains and oilseeds account for three-fifths of total world agricultural production. The patterns of growth in their production, consumption, and trade over the last three decades, despite year-to-year swings, were representative of changes in total food and agricultural production. Foreign production of these commodities increased from 540 million metric tons in 1950 to more than 1.3 billion tons in the late 1970's. Foreign use increased from 555 million tons to more than 1.45 billion tons. U.S. exports increased nine-fold—from 16 to 145 million tons—to close much of the gap between production and consumption.

As a direct result of this widening difference between foreign food production and consumption, American farmers and exporters found a market for commodities that, at home, had been perennially in surplus. They came to depend heavily on the income from those foreign sales, as farmers expanded output to supply that market. Another result of this increasing trade was that the rest of the world's self-sufficiency in these commodities—its ability to meet its demand out of its own production—dropped from 98 percent to 90 percent.

In contrast to this growth in foreign demand for U.S. farm products, demand at home grew relatively slowly. Hence, strong gains in productivity that were being recorded at the same time meant that our *capacity* to produce through the 1960's was still far greater than total demand for our commodities. Farmers adopted technological advances in the form of new machines and new practices linked to chemicals, continued to develop land, and saw their numbers dwindle. The average farm grew in size by 20 to 30 percent per decade.

As a result, real prices *declined* an average of about 1 percent each year, and returns to farmers for their time and investment continued low relative to returns in the rest of the economy. The world market continued to be a buyers' market as our supply of farm products grew persistently faster than demand. The problems were not temporary but persisted for many years.

Against that backdrop, the major agricultural policy decisions of the 1950's and 1960's were made. These decisions adapted the details but continued the basic framework of Depression-era farm programs, using the same fundamental rationale.

As many as 62 million acres—nearly one-fifth of our cropland—were held out of production in an attempt to bring supplies in closer balance with demand and to enhance returns to crop farmers. These and other policies transferred income to farmers from taxpayers and other consumers.

The economic environment abruptly changed in the early 1970's.

Worldwide, the decade proved to be one of slower growth but also of greater year-to-year variations in production and consumption and marked increases in trade. In contrast to the 1950's and 1960's, the 1970's saw wide fluctuations in real prices, from a postwar low to an all-time high within five years. The decision in 1971 to let the dollar "float" in foreign exchange markets effectively lowered the price of U.S. products and made our exports more competitive at precisely the same time foreign demand increased dramatically due to a combination of global economic, demographic, policy, and weather factors.

By the end of the 1970's, virtually all of the cropland resources in the United States that had been idled through Government programs were returned to production.

The conclusion that U.S. agriculture has entered a new era is inescapable when one supplements the global developments with such signs as a sharp reduction in the rate at which the farm population is shrinking, the emerging equality between the incomes of farm and nonfarm citizens, and the essentially full use of available cropland.

The disequilibrium between resources and the market that had so long plagued agriculture seems to have passed. The post-World War II era of chronic surpluses is over.

### Global Prospects

Our analysis suggests that, for agriculture, the 1980's will be far more similar to the turbulent middle and late 1970's than to the first 25 years of the postwar period.

Slower population and economic growth notwithstanding, overseas demand for agricultural products is likely to increase at a near-record rate of 2.5 to 2.7 percent per year. An idea of the amounts involved can be gained by noting that a 2.5 percent increase in foreign use of grains and oilseeds over the 1975-79 base would exceed 33 million metric tons, more than the total production of all but the 15 to 20 largest countries in the world.

At the same time, production in the rest of the world is not expected to increase at anywhere near as fast a rate.

For the world as a whole, population growth slowed in the 1970's to a 1.85 percent annual rate, down from about 1.95 percent in the 1960's, with all continents except Africa showing a decline. Demographers are in general agreement that population growth rates in the 1980's will gradually decline to about 1.82 percent, due to relatively small changes in birth and death patterns in the more affluent countries but pronounced changes in the developing nations.

Those forecasts can be deceptive, unless one remembers that this fractionally lower percentage growth rate is applied to an even-larger population base, that changes in age composition associated with slower growth imply greater per capita food requirements, and that slower population growth rates are likely to translate into stronger demand for improved diets around the world. For example, even at the lower population growth rate of 1.82 percent, the absolute number of people to be fed will increase more than 82 million per year by the mid-1980's—an increase roughly equal in size to the population of Bangladesh. That can be compared to increases of 62 million a year in the 1960's and 72 million in the 1970's.

These factors, in combination, suggest that population-related increases in the volume of food products demanded by the middle of the decade will be more than one-third greater than the absolute increases in demand in the 1970's.

Economic forecasters, while their specific projections vary, generally expect less favorable global economic conditions in the 1980's than existed in the last two decades. The years through 1985 are likely to be marked by a sharp reduction in world economic growth and the persistence of serious inflation and unemployment. Recovery, which could begin in late 1981, is likely to be more prolonged than past recoveries. Moreover, growth rates are not expected to rebound to the high levels reported after earlier recoveries.

However, variations in economic activity among countries and the absolute levels of income that are forecast for much of the world should nearly offset the negative effects those poor economic trends normally would have on the demand for agricultural products. At the same time, some developing nations that lack oil or other high-value resources to export, to pay for imported food, could be severely strained.

Growth in global agricultural production in the early 1980's is expected to slow to an annual rate between 2.1 and 2.4 percent—three-fourths of the postwar rate and well below the projected growth in demand of 2.5 to 2.7 percent. Equally important, the sources of growth in production and the costs of increasing production also are likely to change. Gains as a result of relatively inexpensive expansion in arable areas are likely to be significantly smaller than for any other period over the last 30 years—less than 4 million hectares (9.8 million acres) a year, or less than half the average postwar increase. Many countries face absolute land constraints or are nearing levels that have to be considered as such.

As remaining reserves of readily available, relatively fertile land are depleted, the expansion of agriculture will mean moving farther onto fragile soils, risking erosion and other environmental damage. Production costs will be higher, and





yields substantially lower. The greater the shift onto marginal lands, the greater the chances are for wider swings from one year to the next in production, because even slightly less rainfall than normal could result in a crop failure on those new lands.

In the face of those basic resource limitations, future increases in food production will depend upon accelerating the growth in productivity. That, in turn, will depend upon faster adoption of existing technology and assuring farmers of a greater supply of attractively priced, yield-enhancing production supplies.

However, just *sustaining* the current pace of growth in productivity could be difficult in the next few years. The rising cost of inputs—many of which are petroleum-based—could strain many producers' abilities to maintain, let alone increase productivity in areas where practices are already input-intensive. Cost will be even more an inhibitor in areas where the potential for higher yields is great, but the incomes and other resources needed to finance their attainment are low. No significant technological breakthrough or speed-up in adoption of existing technology appear imminent.

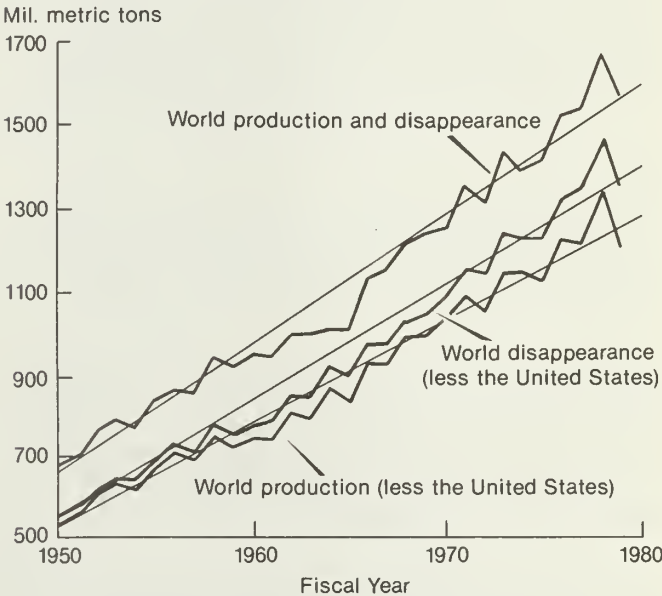
In combination, all these factors shaping growth in foreign food production and consumption suggest, then, that the gaps between supply and demand will continue to widen in the 1980's—possibly at twice the rate of the 1950's and 1960's, and only slightly slower than the record pace of the 1970's. (Figure 1)

As noted before, during the last three decades, world trade in farm commodities to fill such gaps increased more than twice as fast as world production and consumption increased. The United States has been the largest source of supply for this expanding trade flow. The total value of U.S. exports quadrupled in the 1970's alone. In the early 1950's, the rest of the world depended on the United States for 2 percent of its agricultural supplies; by the late 1970's, it depended on the United States for 11 percent.

To fill the widening gap between foreign production and foreign demand outlined above, U.S. exports would have to grow at a rate of 6 to 8 percent a year. By 1985, the rest of the world could well be buying 15 percent of its food, feed, and fiber supplies from the United States.

Figure 1

### World Grain and Oilseed Production and Disappearance, 1950-79



Source: ESS/USDA.

Forecasts for supplies of and demand for specific commodities suggest that the strongest growth in demand will be for feedgrains and oilseeds and will come from the middle-income countries, the less affluent developed nations, certain centrally planned states, and the richer developing countries with a combined population of more than 600 million. The potential for expanding feedstuff production fast enough to fill their strong, livestock-related growth in demand is quite limited. In many of the more populous countries, with particularly limited production potential, any significant improvement in diets will have to come through imports.

In many already established markets, import demand is likely to continue strong, too, with western Europe and Japan remaining the world's largest food and feed importers. Even if lagging economies bring a slower *growth* in demand, these developed countries still will have to import one-quarter to one-third of the farm commodities they need.

The lowest-income nations will face an ever-more-serious gap between the amount of food needed to meet basic human requirements and the amount they can pay for, or "effective demand," in the market. With the demand from other countries for food commodities increasing and tightening the market, the ability to meet those needs will be lessened.



The economic growth of these countries is jeopardized by high levels of international debt and continuing balance-of-payments difficulties. Energy is crucial to the maintenance of their economic progress and creation of additional employment opportunities. However, the high costs of fuel could seriously depress their economies, in turn reducing their demand for imports of farm products. Similar considerations are applicable to some of the developed countries.

Exporters other than the United States may not have the capacity to help meet expanded world demand. By 1985, the United States could, as a result, be shipping twice as much grain and oilseeds as it did in the early 1970's and supplying a larger share of a substantially larger market.

Yet several of the factors underlying the rapid growth in foreign demand likely in the 1980's will also tend to generate wide year-to-year fluctuations in our exports. Shifts in production or consumption virtually anywhere in the world could translate into sharp fluctuations in demand for U.S. commodities—all the more so if the United States assumes greater dominance in world markets.

Demand for grains and oilseeds, for example, could vary by 30 million metric tons from one year to the next due to weather conditions or changes in trade policies abroad. It should not be forgotten that it was policy shifts in many of the other developed or centrally planned nations, notably the Soviet Union, that accelerated the demand for substantially larger quantities of U.S. farm products, and, in turn, helped move American agriculture to today's closer balance. All the forecasts of production, demand, and trade summarized above assume that middle-income and affluent countries, through their agricultural and trade policies, will try to maintain or improve the diets of their people rather than return to greater self-sufficiency.

### **Domestic Prospects**

Many of the forces that have shaped foreign demand over the last three decades were also operating in the United States. Domestic demand for food and feed increased about 1.7 percent a year over that period (in contrast to the annual average increase of 2.9 percent abroad). Slightly less than two-thirds of the increase came from population growth; the remainder reflected increased affluence. Growing incomes and abundant supplies of commodities at relatively low prices caused a dramatic shift in diets toward animal products, especially grain-fed livestock, in the early postwar period, a dietary pattern now largely taken for granted.

Forecasts for the 1980's project slower growth in U.S. food demand. Considering only population and income, these forecasts suggest a rate about three-fourths that of the last 30 years. The slower growth reflects declining birth rates and expected slower rates of real economic growth. The slower growth in the rate of increase in food demand could be altered somewhat by such factors as unemployment compensation, the food stamp program, and shifts in personal spending patterns. Conversely, it could be accentuated if we are unable to deal effectively with such economic pressures as rising energy costs.

Conceivably, the changing world situation could drive U.S. food prices up sharply, at a rate substantially more rapid than the overall inflation rate. This depends significantly on the extent to which energy prices increase and the extent to which we subsidize the use of food commodities to produce energy.

Federal and State subsidy programs now being implemented focus on producing ethanol for motor fuel, with corn, at least in the early 1980's, the predominant source. That could expand this component of total demand to record levels, but the absolute quantities involved *in the short term* are limited by the available ethanol-production capacity, the economics of alcohol production, and public incentives.

But, by as soon as 1983, ethanol-making capacity could be increased to as much as 1 billion gallons, and as much as 2 billion gallons by 1986. At current rates of conversion, 14 to 26 million tons of corn would be required for this use in 1986, adding the equivalent of a 0.2 to 0.3 percent annual increase to total domestic demand for agricultural products.

The forecasts of foreign supply and demand suggest that this decade, like the last five years, will be a period of continuing worldwide adjustments—to record or near-record growth in demand, to slower growth in production, and to increased dependence on U.S. supplies.

When combined with expected domestic demand, it is apparent that American agriculture will face adjustments in the use of our resources to produce farm products, in the use and distribution of farm products within this country, and in the pattern of exports. A more intensive use of our agricultural and nonagricultural resources is implied.

For the foreseeable future, there is no question about agriculture's ability to meet conventional food demand at home and abroad, although prices will undoubtedly rise. But, by the beginning of the 1990's, agriculture could well face shortages of natural resources, and food prices could be increasing at a rate close to or above the general rate of inflation.

## **Inflation and Agriculture**

That likely economic future for the agricultural and food sectors takes on a much greater importance when it is considered in the broader context of national economic performance and goals.

Our most pervasive economic problem today is the inability to gain significant control over the underlying causes of continuing rapid rates of inflation. The agricultural sector is importantly affected by this, both immediately and in a less apparent underlying way, more than by any other economic force. It is thus imperative that the emerging conditions for food and agriculture be viewed in relation to the broader economy, and especially in relation to inflation.

Our history is marked with relatively short periods of inflation followed by longer periods of deflation and stability. Our recent experience with inflation is unprecedented. Since 1964, prices have risen dramatically in four waves. The latest and most severe of these waves continues today as inflation persists at a rate well over 10 percent.

Inflation has enormously important impacts on agriculture. Over the last decade, rapid inflation has driven up production costs, in turn creating pressures for higher commodity price supports. It has worked to change the effects of special tax rules for farming by stimulating activities that take advantage of these tax rules. It has also contributed to excessive demands for credit, as farmers attempt to acquire more assets in order to capture the capital gains from increased land prices.

Continued, unabated inflation will be a particular concern for agriculture. The inability to control it may give rise to pressures to restrain U.S. exports, to limit credit for farming, to modify legislation that restrains production or restricts competition, to encourage food imports, and the like.

Two of the many impacts of inflation on agriculture are particularly critical to farm structure. Inflation increases the wealth of those who own farmland, and it leads to higher rates of interest—rates that are greater than “current earnings” from land over extended periods of time. Together, these two effects strengthen the competitive position of wealthy people—farm and nonfarm—in buying farmland. To the extent this occurs, it leads to further concentration of farmland ownership and to fewer, larger farms. This effect of inflation points up the crucial importance of slowing inflation if the trends in farm structure are to be significantly altered.

Our ability to deal with inflation in the future is problematical. With “supply-side” economic policies being embraced, we are embarking on an unprecedented national experiment. At the same time, a tight balance between world food

supply and demand could stimulate even greater pressures on the rate of inflation.

However, our society does not have to experience inflation even if the food supply-demand situation tightens and food prices increase significantly. But inflation tendencies will emerge under these circumstances—for example, if the amount of money in the economy is increased to accommodate these food-price increases, so that other prices do not decrease.

The agricultural community thus has a special stake in the affairs of the general economy, the control of inflation, and the handling of monetary policies in ways that food-price increases (if they should develop) are not allowed to be translated into inflation.

Similar reasoning applies to the way our society adjusts to future increases in energy prices. Past practice has been to increase the money supply so that increases in energy prices are accommodated without necessitating declines in other prices. Many of us prefer this approach individually. It forestalls declines in our nominal wages and the nominal prices of our products. But, in the end, inflation is abetted, our real wages and real product prices decline, and those with assets—including farmland—have a gain in real wealth. These are the people who, in turn, can further concentrate the ownership of farm resources into their relatively few hands. But, as with food prices, higher energy prices need not be translated into inflation.

## **Changing Perspectives**

Given these global supply-demand prospects and inflation problems, the emphases of food and agricultural policy and the day-to-day concerns of officials charged with managing policy could, therefore, be quite the opposite from those of the past decades.

Rather than overproduction and surpluses, the task of supply management will more likely relate to shortages, encouraging production, and facilitating adjustments stimulated by these conditions. Concerns will likely become much broader and involve questions significantly different from those traditionally addressed by agricultural policy.

Important—in fact, crucial—questions arise when the prospective increases in demand and higher energy costs are considered. One is, what is the nature of the supply of land for agricultural use? If it turns out to be sharply less or requires longer to bring into production than thought, higher product prices (and higher food prices) can be expected. If not, adjustments will be less difficult. Unfortunately, our understanding of the response of land use to farm prices is not as adequate as we would like. One reason is that conditions comparable to the most likely scenario of prospective supply-demand balance have not been experienced for sustained periods in recent years.

A tight demand-supply situation also implies windfall profits for owners of productive land. The resulting wealth of those owners can be used by them to compete with others for land; thus, further concentration of land ownership and production could result unless compensating adjustments develop.

Further, under this scenario, conservation will become an even more critical concern. As the increase in real prices encourages the expansion of production onto more fragile lands, environmental degradation would undoubtedly become greater; that implies a loss in future productive capacity. This would raise the question of whether market prices truly reflect all incurred social costs (such as loss of topsoil, environmental degradation, subsidized water, subsidized transportation, *et cetera*). As the competition for the same land between export crops and forage or lower-return crops intensifies, the cattle cycle, supplies of beef, retail food prices, and related elements of the food economy would all be affected. Inevitably, the wisdom of a policy of maximizing exports would be scrutinized.

Those probabilities alone clearly point to the need for a well-developed farm- and food-policy framework that allows for careful evaluation of the exchanges of cost and benefit between trade and other objectives of our society.







In the previous chapter, we viewed American agriculture as it functions in today's global setting. During the same period that global forces led to the emergence of the United States as a dominant supplier of food to the rest of the world, domestic forces fundamentally changed the character of rural areas. It is this second, parallel environment—the rural context—that is examined in this chapter.

For most of our history as a Nation, rural people primarily lived on farms and worked the land. Rural communities provided the facilities and services required by these farm families and businesses, and rural policies and farm policies were virtually synonymous. Thirty years of technological change in agriculture—accompanied by farm consolidation and massive out-migration from farms and rural areas—have markedly reduced the usefulness of rural residence as an indicator of economic or social condition.

Farming no longer dominates rural life.

When farming was the dominant economic activity of rural people, it was logical to view *farm* income-support policies as a major tool to deal with *rural* poverty. After all, the incomes of a large percentage of farm families fell below the poverty level. By the 1960's, however, the logic of using farm commodity programs to try to solve rural income problems began to be questioned. Despite more and more costly price-support programs, more than half of all farm families remained in poverty in 1960. Moreover, rural *non*-farm poverty continued largely unabated, and these nonfarm families made up over 65 percent of the rural poor.

The failure of conventional agricultural policy to solve the rural poverty problem and the large number of poor people in rural areas led to a new round of thinking about rural-development policy.

Two different views of what should be done emerged from this rethinking. One group argued that the solution to rural poverty was the promotion of a more vigorous rural nonfarm economy that would create new jobs for the rural poor, including farmers and their families. This economic development was seen as an approach that would correct an unbalanced growth pattern that was wasting rural-community resources and reverse the migration from the countryside to cities that was placing great strains on cities that could no longer absorb more poor people.

A second group argued that the answer to rural poverty remained in agricultural policy, but one that would rejuvenate the farm economy by fostering greater participation on more favorable terms for the "small" farmer. To do this, policy was to be reformed and redirected toward smaller producers. Corporations would be discouraged from entering farming, and new efforts were to be made to help farmers retain access to land and markets, assuring their continued viability.

Only a few, if any, individuals suggested that the appropriate approach to rural-poverty problems would be to combine these strategies. The arguments were largely made in an either-or framework.

Advocates of both of these approaches were evident at the Structure Project meetings.

When we looked anew at rural America after the experience of the past decade, we could not help but be struck by the magnitude of the changes that have transformed the rural economy and rural communities in the United States. As farm production and earnings have continued to become more concentrated into fewer and larger units, the rural non-farm economy has grown rapidly and diversified in ways that have had profound implications for farmers, especially small-farm operators and their families; for other rural residents, and for rural communities.

The accompanying tables indicate how dramatic the changes in the rural economy have been.

Of the 13 million jobs created nationally between 1970 and 1977, more than 40 percent were located in nonmetropolitan areas, even though these areas held only about 35 percent of the population (Table 1). Moreover, as we see from Table 2, the rural population grew by almost 11 percent during this period, while the urban population grew by only 4.4 percent.

This population growth represented a significant reversal for rural areas. Three million more people moved out of rural areas than moved into them in the sixties; there was net in-migration of 2.25 million persons into them from 1970 through 1976. That net in-migration probably reached 3 million by 1978. Reduced out-migration from farms, increased numbers of persons deciding to retire in rural areas, growth in longer-distance commuting to urban or suburban jobs, and a strong preference for rural areas or small towns as a place to live have all contributed to this growth.



**Table 1: Change in employment of persons 16 years and over by major industry group, 1970 to 77**

Item	Additional Employment 1970 to 77 (thousands)			Percent Distribution of Additional Employment		
	U.S.	Metro	Nonmetro	U.S.	Metro	Nonmetro
Total, all industries	12,961	7,652	5,399	100.0	100.0	100.0
Agriculture, Forestry, Fisheries	207	39	168	1.6	0.5	3.1
Mining	113	59	54	0.9	0.8	1.0
Construction	456	141	314	3.5	1.9	5.8
Manufacturing	663	-217	880	5.1	-2.9	16.3
Transport, Communications, Public Utilities	580	270	310	4.5	3.6	5.7
Wholesale Trade	409	256	153	3.2	3.4	2.8
Retail Trade	2,789	1,818	979	21.5	24.0	18.1
Finance, Insurance and Real Estate	1,115	824	291	8.6	10.9	5.4
Business and Repair Services	763	578	185	5.9	7.6	3.4
Personal Services	291	93	198	2.2	1.2	3.7
Entertainment and Recreational Services	249	211	38	1.9	2.8	0.7
Professional and Related Services	4,637	3,066	1,571	35.8	40.5	29.1
Public Administration	687	430	257	5.3	5.7	4.8

Source: U.S. Dept. of Commerce, Current Population Reports, Special Studies, P-23, No. 75, *Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1977 and 1970*, (Washington, D.C.: U.S.G.P.O., Nov. 1978)

**Table 2: Regional population change, 1970 to 77**

Item	Population Growth or Decline 1970 to 77			Percent Change 1970 to 77			Distribution of Growth by Residence		
	U.S.	Metro	Nonmetro	U.S.	Metro	Nonmetro	U.S.	Metro	Nonmetro
	(thousands)			(percent)			(percent)		
All Regions	12,747	6,049	6,698	6.4	4.4	10.7	100.0	100.0	100.0
Northeast	230	-933	1,162	0.5	-2.4	12.0	1.8	-15.4	17.3
North Central	1,421	330	1,091	2.6	0.9	5.9	11.2	5.5	16.3
West	4,377	3,220	1,157	12.8	12.0	15.9	34.3	53.2	17.3
South	6,718	3,430	3,288	10.9	10.0	12.1	52.7	56.7	49.1

Source: U.S. Dept. of Commerce, Current Population Reports, Special Studies, P-23, No. 75, *Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1977 and 1970*, (Washington, D.C.: U.S.G.P.O., Nov. 1978)

**Table 3: Selected demographic characteristics: Metropolitan and nonmetropolitan population, 1970 and 1977**

Item	1977		1970	
	Metro	Nonmetro	Metro	Nonmetro
Average age of family head	29.5	29.6	28.2	28.1
Percent of population white	85.4	89.5	86.8	89.8
Average family size	3.37	3.39	3.56	3.58
Percent high school graduates of pop. 25 Years and Over	68.1	58.3	55.7	46.4
Percent with 4 years of college of pop. 25 years and over	10.5	6.8	6.5	4.7
Median income (1976 dollars)				
All regions	15,841	12,831	16,048	11,931
North and West	16,116	13,877	16,549	13,244
South	15,089	11,494	14,220	10,202
Percent of families below poverty	10.7	14.0	11.2	19.3
Percent of families with head employed 50–52 Weeks below Poverty	2.0	5.2	2.7	6.7
Percent of pop. 16 and over in labor force	76.7	73.6	77.6	72.3
Percent of women 16 and over in labor force	49.2	45.4	43.2	38.6
Percent of labor force unemployed	8.6	8.3	4.9	5.7

Source: U.S. Dept of Commerce, Current Population Reports, Special Studies, P-23, No. 75, *Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1977 and 1970*, (Washington, D.C.: U.S.G.P.O., Nov. 1978)

The significant movement of people into rural and small-town communities in the seventies has added to the diversity of rural pursuits. The largest groups of newcomers supplied professional services (29 percent), followed by those working in wholesale or retail trade (21 percent) or manufacturing (16 percent). Further, the order of employment in the three leading categories for *recent*-in-migrants is the reverse of the order for these same categories among all non-metropolitan workers. The newcomers are less likely to go into manufacturing and more likely to be involved in professional services. This mirrors the trend in overall rural employment during the seventies. Secondary industries such as wholesale and retail trade, finance, insurance and real estate, and services together accounted for over 60 percent of all rural employment growth.

If we look more closely at the trends in Table 1, one fact is clear: *agricultural* employment growth played almost no role in the recent rural economic revival. In this new rural economic environment, even those who live on farms are almost as likely to work in nonagricultural jobs as to work on the farm. Of the 3.3 million farm residents in the work force in 1978, 44 percent were *not* employed in agriculture. The growth of rural nonfarm job opportunities, and the combining of farm and nonfarm pursuits has important implications for the economic well-being of many small farmers.

The impact of this economic transformation on the rural economy is visible in the various characteristics depicted in

Table 3. For example, median real income (adjusted for inflation) actually declined between 1970 and 1977 in metropolitan areas, while median real income rose in rural areas.

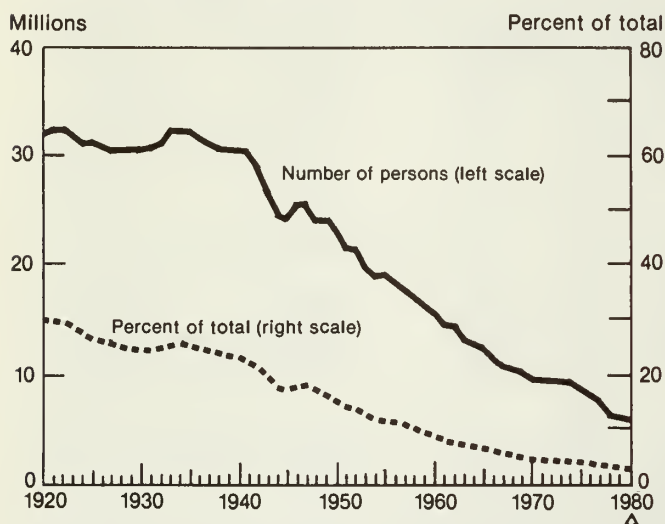
Rural families' incomes remained, however, about 20 percent below those of urban families. The incidence of poverty in the rural population has fallen dramatically, although rural poverty still represents a disproportionate share of national poverty. Unemployment, which grew in both settings, rose less in the rural areas and was lower there in 1977 than in urban areas (although rural unemployment may be understated because of measurement problems).

Behind those averages lies much diversity. Nearly 700 counties, significantly concentrated in the Great Plains and Corn Belt, continue to have agriculture as a principal source (20 percent or more) of personal income. Most of these counties continued to lose population in the 1970's.

More than 2 million rural families remained below the poverty level in 1978, and 7 percent of these were farm families. Neither rural development nor agricultural policies have significantly improved the economic well-being of this group.

Figure 2

## Farm Population, 1920 to 1980



Source: U.S. Departments of Agriculture and Commerce.

### The Farm Population

Before proceeding to what the changes in the connections between the farm and rural economies might mean, it is useful to take a closer look at the farm population itself. When it was first enumerated separately in 1920, the farm population totaled 32 million persons, or 30 percent of the total population. It has declined almost continuously since, at a pace that corresponds generally with a decline in the number of farms. (Figure 2)

In 1979, the most recent year for which final data are available, about 6.2 million persons were living on farms (Table 4). Put another way, only 1 out of every 33 persons—3 percent of the Nation's 220 million—resided on a farm.

That estimate is based on the 1978 definition of a farm: the farm population consists of all persons living in rural territory on places with sales of agricultural products totalling \$1,000 or more a year.

The previous definition, in effect since 1959, included all persons in rural areas on places of 10 acres or more with at least \$50 worth of agricultural-product sales, or places of less than 10 acres with at least \$250 worth of sales. Using this earlier definition, the farm population in 1979 would be an estimated 7.6 million persons. Changing the definition, therefore, reclassified about 1.3 million persons out of the farm population.

### Employment

The number of persons employed primarily in agriculture in 1979 was 3,297,000, about equally divided between farm residents and those living off the farm. Persons self-employed in agriculture—farm operators—are mainly farm residents. Of these 1,642,000 farm operators, about 1.1 million—or two-thirds—lived on farms. The rest lived in towns or nonfarm homes in the open country.

Agricultural laborers were more likely to live off the farm and commute to work. A sample survey of workers who indicated they worked at least one day on a farm during 1979 found 2.7 million persons in the hired farm work force. This estimate does not account for undocumented aliens, although, in some regions and for some crops, illegal workers might compose a majority of the hired work force. Total hired farm employment currently is more or less stable, a long-term decline apparently having ended in the seventies.

Most farm workers are hired by the largest farms; two percent of the farms account for more than one-third of all hired labor expenditures. But one in every five farms with gross sales of \$40,000 or less employs hired labor as well, and these operations account for more than half of all employers.

Slightly more than one-third of the hired farm work force are heads of households or single. More than three-fourths are men or boys. Less than half of all farmworkers 25 years old or older have completed high school, but more than half are under 25 years old. Minority farmworkers as a group tend to be significantly older, but the median age for the work force as a whole is about 23 years.

Increased seasonal employment on cash grain farms, especially in the Midwest, accounts for a trend in recent years toward a younger hired agricultural work force.

This examination of the characteristics of the farm population and the agricultural work force in rural America leads to some summary observations:

- The total population of the United States has more than doubled since 1920, but the *rural* population has remained relatively constant in absolute numbers at 54 to 55 million for the last several decades. As a proportion of the total, the rural population has, of course, declined, from about 45 percent to about 25 percent today.

- The *farm* population over the same period has declined by 80 percent—that is, for every 10 persons in the farm population in 1920, there are now only two. But the rate of decline appears to have slowed in the seventies.



**Table 4: Selected population characteristics, 1920–79**

Year	Total resident population <sup>a</sup>	Rural population <sup>b</sup>	Farm population <sup>c</sup>	Total agricultural employment <sup>d</sup>	Agricultural wage & salary workers <sup>e</sup>
(Thousands)					
Previous definitions					
1920	105,711	51,553	31,974	NA	NA
1930	122,755	54,042	30,529	NA	NA
1940	132,166*	57,459	30,547	NA	NA
1950	151,326	54,479	23,048	7,160	1,630
1960	179,323	54,054	15,635	5,458*	1,762
1970	203,810	53,887	9,712	3,462	1,152
1971	206,219	NA	9,425	3,387	1,161
1972	208,219	NA	9,610	3,452	1,216
1973	209,859	NA	9,472	3,452	1,254
1974	211,389	NA	9,264	3,492	1,349
1975	213,051	NA	8,864	3,380	1,280
1976	214,680	NA	8,253	3,297	1,318
1977	216,400	NA	7,806	3,244	1,330
1978	218,228	55,000 (est.)	8,005	3,342	1,418
1979	220,099	55,000 (est.)	7,553	3,297	1,413
Current definition					
1978	218,228	55,000 (est.)	6,501	3,342	1,418
1979	220,099	55,000 (est.)	6,241	3,297	1,413

Source: U.S. Bureau of the Census, Decennial Census of Population and Current Population Reports, U.S. Department of Labor, Bureau of Labor Statistics.

NA = Not available

\*Denotes first year Hawaii and Alaska included in the data.

<sup>a</sup> Estimate as of July 1 each year.

<sup>b</sup> Persons outside urban areas in open country, on farms, and in places with a population less than 2,500.

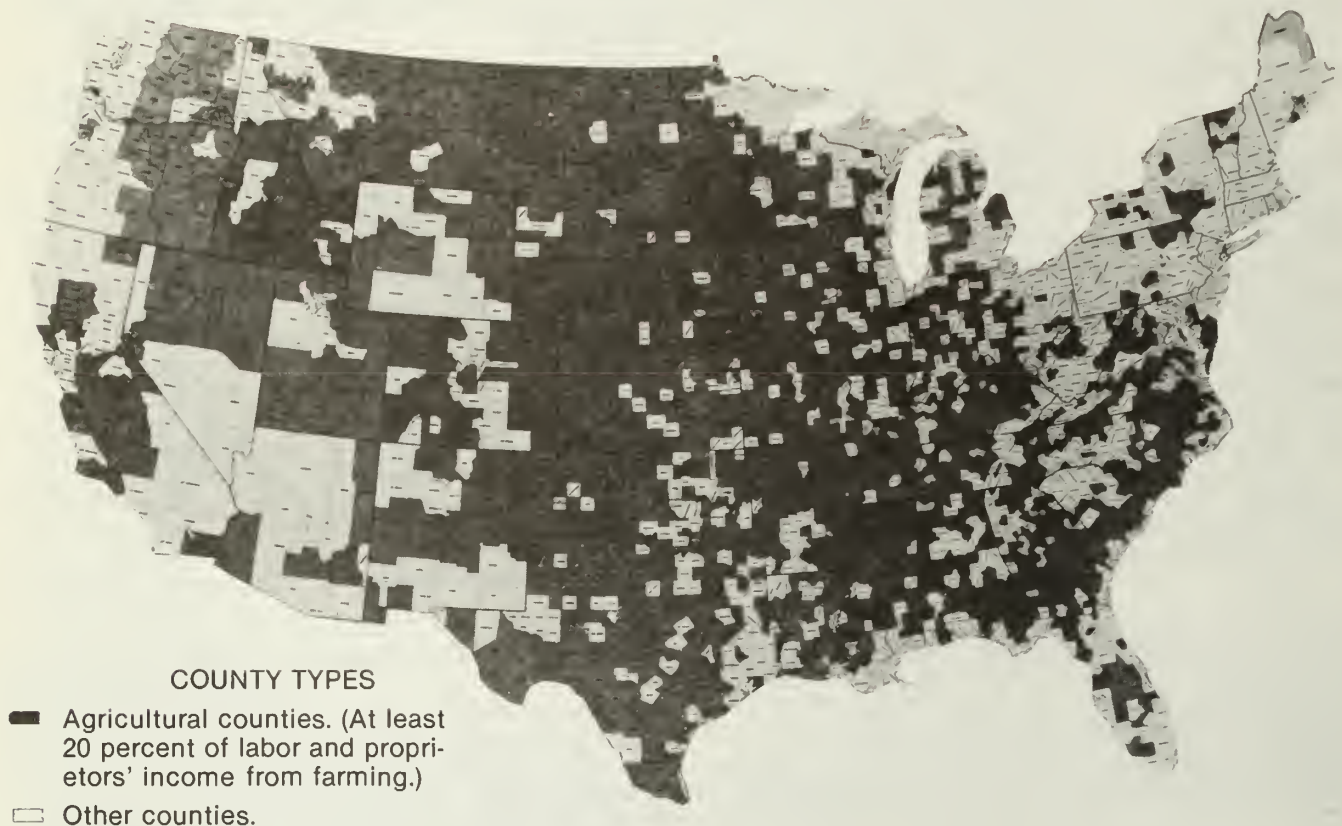
<sup>c</sup> Current definition: Persons on places with at least \$1,000 of agricultural sales. Previous definitions: Since 1960, persons on places of 10 acres or more with at least \$50 of agricultural sales and on places under 10 acres with at least \$250 of agricultural sales. Prior to 1960, farm residence was based essentially on self-identification of the respondent.

<sup>d</sup> Sole or primary agricultural employment of persons 16 years old and older. The data are not strictly comparable over time because of definitional changes. Data are annual averages.

<sup>e</sup> Persons 16 years old and older.

Figure 3

## Agricultural Counties, 1950



- The total *agricultural labor force*, regardless of residence, has declined 60 percent, the largest decline being among self-employed owner-operators. *Hired farmworkers* have declined in numbers since 1950 by nearly 40 percent, but the total was relatively stable in the seventies, actually increasing slightly from its low point in 1970.

- The out-migration of persons from agriculture over the past 50 years was tremendous. One of the results is that total farm-sector earnings are distributed among a much smaller number of persons today; any comparison of per capita incomes among various sectors of the economy must take this into account.

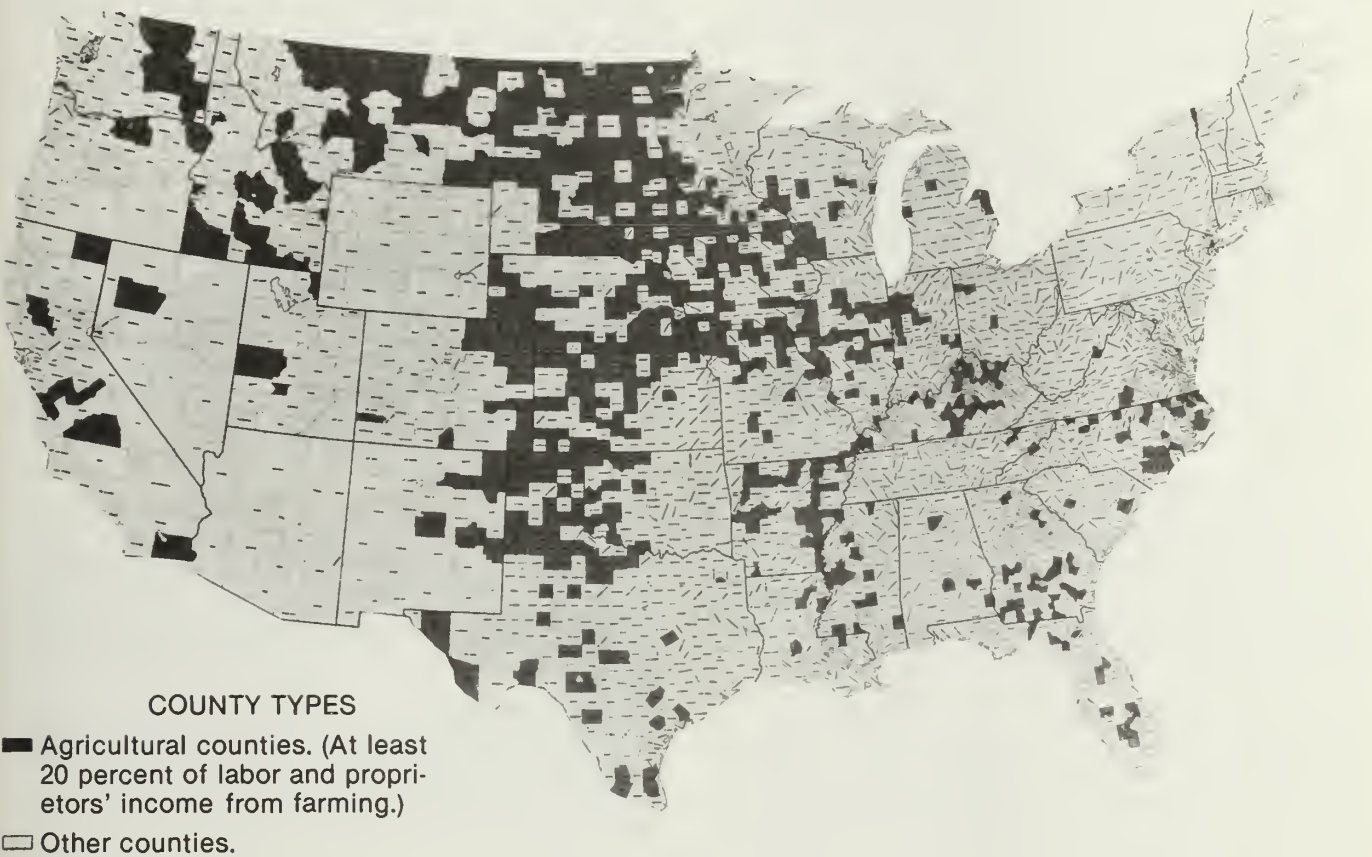
### Changing Links Between Farming and the Rural Economy

Those various employment and demographic statistics make clear that the connections between agriculture and rural America have changed significantly over the last few decades.

One dramatic indication of the changed rural situation is that, while more than 2,000 counties spread across virtually the entire country had agriculture as a principal source of personal income in 1950 (Figure 3), by the mid-1970's, as already noted, there remained fewer than 700 such counties, mainly in the Corn Belt and Great Plains (Figure 4). Accordingly, there was a significant decline in the number of people living in areas with major dependence on agricultural income—from nearly 25 percent of the U.S. population in 1950 to less than 4 percent in 1977.

Figure 4

Agricultural Counties, 1975-1977



Agriculture has not disappeared in those formerly agricultural counties; rather, it has been *replaced* as a principal component of economic activity by growth in the nonfarm sector. For nonmetropolitan America as a whole, three major industries—manufacturing, wholesale and retail trade, and professional services—each now employ roughly twice as many workers as agriculture.

The 673 counties which today continue to rely most heavily on agriculture typically average about 11,000 residents each, according to preliminary results of studies conducted as a part of this project. In them, almost 78 percent of the resident farmers regarded agriculture as their principal occupation, and more than half did not work off the farm. Tenancy is more common, and operators tend to be slightly younger than the farmers in other rural counties. Farm ownership by minorities is lowest in these counties. Not many of

these counties' citizens suffer from substandard housing, but their day-to-day access to urban-based services and businesses is limited.

On the whole, they are not poor counties. In the 1975-77 period, per capita income in the farming-dependent counties was still 20 percent less than that in counties that had never been farming areas, but that income had increased by 77.4 percent since 1969-71, when it was 26.2 percent below the urban areas. The per capita income in the rural counties where farming accounts for a smaller share of the local economy than in the 1950's fell about 4 percent behind the farming-dependent counties during that 6 year interval, but grain prices also set record highs during this period.



The belief that a direct relationship exists between farming and the health of the rural communities nearby has been firmly held over the years and was voiced repeatedly at the Structure Project meetings. There is evidence to support this belief, and many groups have used it to argue in favor of maintaining a large number of farms as a way to preserve the vitality of communities.

The problem with this argument is that, as we have seen, most rural communities no longer depend primarily on agriculture to shape their futures. Even farm-dependent rural communities do not exist in a vacuum. Many forces besides those associated with agriculture play important roles in changing them. Most prominent among these forces are new methods of retailing, the mobility of an automotive/trucking age, and new rural industries. Farm and nonfarm rural citizens alike are affected by these factors, and most of the changes these forces brought about would have occurred regardless of changes in farm structure.

This is not to imply that farm structure has *no* impact on the rural economy or community. The work that has been done has shown generally that a change in the local pattern from one of small farms to one of larger ones means greater regional *income*, while a pattern of more small farms means greater regional *employment*. However, the magnitude of these impacts was found to be small.

Another very interesting research finding, however, is that the significance of the local structure of agriculture for rural development is not so much in farm sizes but how the farms are organized. That is, rural communities appear to be affected by whether farms are owned, operated, and managed by a family or whether these three economic functions are separated and undertaken by different groups of individuals, such as an absent owner, hired workers, and a resident manager.

Walter Goldschmidt's examination 40 years ago of Arvin and Dinuba, two towns in California's San Joaquin Valley, analyzed the impacts of family versus industrialized agriculture. Goldschmidt's central hypothesis was that the key factor influencing community development was the percentage of hired workers in the farm-occupation mix: the higher the proportion, the lower the quality of life in the community. His work supported the hypothesis. In addition to the effects of a less-stable population in Arvin, where hired workers were greater in number, the owners of industrialized farms around Arvin generally lived elsewhere, with rents and returns to capital investment diverted from the community.

Goldschmidt's research remains the most detailed of any done on these questions. In 1977, the Small Farm Viability Project conducted a follow-up to the Arvin-Dinuba study. This group found that Goldschmidt's basic findings were still valid. Meanwhile, William D. Heffernan and others con-

ducted studies in Missouri addressing the relationship between farm organization and community vitality. They concluded that managers of nonfamily farms are less involved in community *social* participation than are family farmers, but there was no difference between managers and family farmers in activities with a purely *economic* benefit.

Recently completed work, again in California, concluded that the relationship between farm structure and the rural community is more complex than has been suggested in the 35-year debate over farm *sizes*.

While these studies are suggestive about the impact of farm ownership and structure on rural community life, they do not provide sufficient evidence to be definitive. The behavior of owners, workers, and managers is influenced by many factors, and our understanding of the relative importance of the various elements, and the data available to achieve better understanding, are still inadequate.

### Part-time Farmers

We have seen how the forces of change in the United States since World War II have meant, among other things, that "rural" and "farm" no longer mean essentially the same thing, and that the relative importance of agriculture to the rural economy has shifted measurably, even though nearly 700 counties continue to depend significantly on farming.

One development of recent decades in rural America—part-time farming—deserves particular attention because of its implications for the rural economy and the implications it might hold for the structure of agriculture in the years ahead.

Part-time farming has apparently developed as a permanent institution, with a different character than the one attributed to it in years past. It was widely believed during the 1950's and 1960's that part-time farming was a byproduct of the rapid changes taking place in agriculture—a transition for persons either entering full-time agriculture or leaving it.

The conventional wisdom has maintained that some producers sought off-farm work to secure the money to meet such farm-related goals as buying more land and equipment or paying off existing debts, while other such producers worked temporarily off the farm to gain the skills needed to leave agriculture for another type of work. However, our review of the research on structural issues found more recent evidence that a significant number of the part-time farms are not in a state of transition or under economic stress but are stable operations maintained by reasonably prosperous individuals.

Much of the new off-farm work is permanent. Studies in the last two years in Kentucky and Illinois found that a majority of those working off the farm did so to increase family income, but *not* for reinvestment in the farm or with plans to entirely give up farming.

The stability offered by part-time farming could be a buffer against further concentration in farmland ownership. In addition, the increased income provided by combining farm and nonfarm jobs affords a way out of poverty for families on many small- and medium-sized farms.

## Conclusions

The incomes of rural people and the economies of rural areas are each year becoming less affected by changes in farm prices and incomes from farm sources. The economic health of many rural areas is increasingly linked to the performance of the general economy. This is a reversal of the situation existing when farm commodity policies were first developed 50 years ago; today, farm policies and rural policies are no longer synonymous. This does not mean there is no longer any link at all.

Clearly, the incomes of many people living on places still defined as farms are more dependent on rural nonfarm development and policy than on farm policy. That is, the availability of nonagricultural employment is important to farm families in achieving the income necessary for an adequate standard of living. Furthermore, for some people establishing themselves in farming, off-farm activity may be a way to obtain the resources necessary to farm. Thus, rural development and policy today are of fundamental importance to the incomes of many farm operations and an important means to retain diversity in farm sizes and situations.

We have also seen that nearly 700 counties *do* still have a particularly large stake in agricultural policy today. Well over 40 percent of the direct income-support payments from farm programs went to farmers in those counties in 1978. Because these counties continue to specialize in agriculture, most have not shared in the rural population growth of the seventies. They continue to be unable to develop new employment opportunities rapidly enough to offset disappearing opportunities in local agriculture. These counties do not have large concentrations of poverty, substandard housing, or other distress. However, access to urban-based services is a serious problem for residents in many of these areas.

Finally, it is important to recognize that farming and non-farming activities are compatible and, in fact, highly complementary for many people. The challenge for Government policy is to devise, first, rural-development policies that help families improve returns from their nonfarm activities and, second, devise farm policies which, at a minimum, do not hinder the farm activities of families farming part-time.

## Selected References

- Beale, Calvin L. "Recent U.S. Rural Population Trends and Selected Economic Implications." Statement before the Joint Economic Committee, United States Congress, Washington, D.C. May 1978.
- Brown, David L. "Farm Structure and the Rural Community." *Structure Issues of American Agriculture*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economic Report 438. November 1979.
- Carlin, Thomas A. and Linda M. Ghelfi. "Off-Farm Employment and the Farm Sector." *Structure Issues of American Agriculture*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economic Report 438. November 1979.
- Carlin, Thomas A. "Small Farm Component of U.S. Farm Structure." *Structure Issues of American Agriculture*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economic Report 438. November 1979.
- Deavers, Kenneth L. and David L. Brown. "Social and Economic Trends in Rural America." Rural Development Background Paper. The White House, Washington, D.C. October 1979.
- Jordan, Max and Tom Hady. "Agriculture and the Changing Structure of the Rural Economy." *Structure Issues of American Agriculture*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economic Report 438. November 1979.
- LeVeen, E. Phillip. "Enforcing the Reclamation Act and Rural Development in California." *Rural Sociology*. Vol. 44, No. 4., pp. 667-690. 1979.
- MacCannell, D. and Jerry White. "Agricultural Land Ownership and Community Structure in California's Central Valley." Mimeo. University of California-Davis. December 1980.
- Miller, James P. *Nonmetro Job Growth and Locational Change in Manufacturing Firms*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. RDRR No. 24. August 1980.
- United States Department of Agriculture. *Rural Development Perspectives*. No. 2, Focus on Rural Poverty. Economics and Statistics Service, Washington, D.C. March 1980.
- United States Department of Commerce. *Farm Population of the United States*. Current Population Reports, Series P-27, No. 53, Bureau of the Census and Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. September 1980.



## CHAPTER 3 A PROFILE OF AMERICAN AGRICULTURE





While much closer global food supply-demand balances were signaling the end by 1980 of 60 years of chronic surpluses of farm commodities in this country, and while rural America was diversifying its economic base, away from a dependence on agriculture, other pervasive forces were fundamentally and irreversibly altering the economic, technological, and institutional character of the farm sector.

By the late 1960's, observers were becoming aware of the cumulative significance of a number of the trends. The immediate short-supply crisis of the early 1970's diverted attention away from those trends, but they persisted. The structural changes they brought to agriculture could no longer be ignored by the late 1970's.

The emergence of the American Agriculture Movement and tractors on the U.S. Capitol Mall grabbed the public's attention and generated a host of questions about who those farmers were and why they were having problems—especially since news accounts of those demonstrations revealed that many participants controlled large acreages of farmland and had assets and net worths undreamed of by the average citizen.

A number of factors converged at the same time to compel a hard look at the status of the farm sector. At the Department of Agriculture, research was already in progress, aimed at providing clearer understanding of the structural changes taking place in the farm sector and in the links between agriculture and other firms and persons in rural America. Many of these findings have been submitted in annual reports to the Congress on the status of the family farm.

The first results of the research efforts brought to the public's attention the significance and pervasiveness of changes that had *already* taken place: farm production and landownership are now highly concentrated in a relatively few hands; hundreds of thousands of very small farms contribute little to total production, but their owners are no longer poor; many large farms are heavy users of borrowed capital and increasingly vulnerable to an instability in commodity prices, and, by and large, investments and resources in commercial agriculture are earning rates of return competitive with other investments.

But when researchers began to look behind the national-average statistics, to seek causes for and better explanations of the changes, many began to fully grasp the significance of what was happening to the farm sector and the implications for the continued usefulness—indeed, the appropriateness—of longstanding farm policies.

Existing policies and programs were founded on premises no longer supportable; they were designed to address problems that might no longer exist.

Existing policies do not fully address new kinds of problems that a markedly changed farm sector will encounter in the new global and domestic economic settings described in the previous chapters.

Because of the greatly changed mix of farm firms and their economic characteristics, continuation of past programs and policies will likely contribute to further concentration of economic power, inflation in land prices, and unwise use of resources, without apparent benefit to the rest of society.

In this chapter, the available data and findings from recent research are used to develop a profile of American agriculture today—its farms, people, resources, financial condition, and economic performance—in a way that reveals the significance of the changes for future public policy. Some of the implications are drawn at the end of the chapter.

### The Farms and Their Characteristics

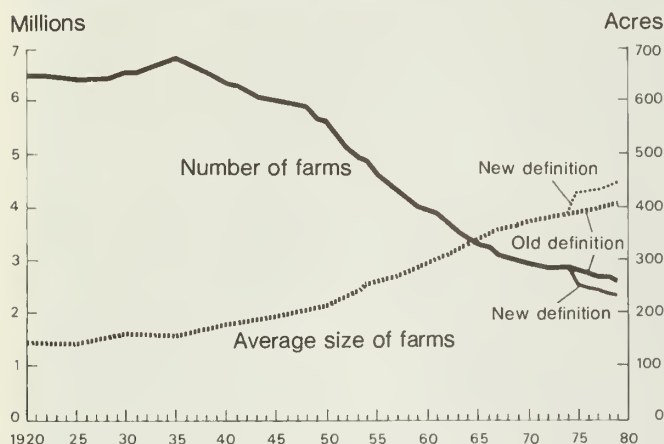
Perhaps the best-known characteristics of the farm sector are that the total number of farms has declined over time and the average size has increased (Figure 5).

Those parallel changes have been the most visible manifestations of the forces affecting agriculture. Primary among those forces are the technological innovations that permitted economic efficiencies and higher incomes, attainable only by farms growing larger. A result was an excess of labor followed by emigration from farming.

The decline in total farm numbers is also the most likely statistic to be used in discussions of general policy issues, such as what some believe to be the demise of the family farm. Yet, this statistic, while making a point about what has occurred, conceals much more than it reveals about the farm sector today. This section attempts to look behind the total numbers to the sizes, types, locations, and income and wealth characteristics of the farms remaining today.

Figure 5

## Number and Average Size of Farms



Sources: Average size of farms 1920-50 from 1964 Census of Agriculture  
All other data from Crop Reporting Board, USDA

### Farm Numbers

Any discussion of farm numbers and sizes today is importantly conditioned by definitions, perhaps more so than when there were several millions of farms regardless of how defined. The most widely used source of farm numbers is the every-five-year agricultural census of the Department of Commerce. The census reports two definitions of a farm: the new official one adopted in 1978, and the former one, which is continued in use for continuity of the data series. (The old definition is used here because it is more consistent with other data presented.) The most recently available comprehensive estimates are from the 1974 census; complete data from the 1978 census had not been released when this report was written.

The other source of farm numbers is the Department of Agriculture. Its estimates are derived using the census counts as benchmarks for extrapolation, with modifications as suggested by other information.<sup>1</sup> The Department's estimates for 1978 are shown in Table 5.

The new definition of a farm is more restrictive, counting a place as a farm only if it has product sales of \$1,000 or more, regardless of acreage. This definitional change affected only the number of farms in the smallest-sized category (sales less than \$2,500). The number in this category was reduced by about 302,000 (to 609,000) reducing the total number of farms in 1978 to 2,370,000. Thus, the total number of farms in the United States is 2.67 or 2.37 million, depending upon the definition used. (The 1978 Census of Agriculture reported 2.48 million farms under the new definition.)

### Farm Size

The size distribution of those farms, or the proportion of the farms in each size category, provides additional insight into their characteristics. Shown by value of sales (economic class), the distribution is far from "normal"—that is, an equal proportion of farms of varying sizes both above and below the mean size. It is, in fact, highly skewed toward the smaller sizes; there are many more farms *below* the mean size than above it.

But when we consider the contribution of farms in each size category to the total value of all food and fiber production, we see (Table 5) that the relatively numerous smaller farms contribute proportionally much less to total production. For example:

- Farms below \$5,000 in sales constitute 44 percent of all farms, but contribute only 2 percent of the total sales.
- Farms with \$5,000 to \$40,000 in sales are 34 percent of the total number of farms and represent 16 percent of production, by value.

Together those two size categories represent 78 percent of all farms, but only 18 percent of sales. On the other hand,

- Farms with \$40,000 to \$100,000 in sales are 15 percent of all farms and have 25 percent of the total sales.
- Farms with sales above \$100,000 are 7.1 percent of the farms and have 56 percent of the total sales.
- The 64,000 farms with sales of more than \$200,000 a year constitute 2.4 percent of all farms but 39.3 percent of the total sales. (The 1978 Census of Agriculture counted 81,000 in this category.)
- Farms with more than \$1 million in sales comprised 0.26 percent of the farms in 1978 but 19.9 percent of the sales.

Looked at yet another way, the 2.08 million farms with 1978 sales under \$40,000 *averaged* \$10,379 in sales, but the 64,000 with sales above \$200,000 averaged \$711,141 each. Lumping all farms together, the national average sales were \$43,328.

The concentration of production into a relatively small number of larger farms is obvious. These data also suggest that there would be many more economically disadvantaged farm families (and many below the poverty line) on the smaller farms if farming were the sole or even the primary source of income. A farm that *grosses* only \$40,000, for example, even with the best of management, is unlikely to provide a *net* income to the operator and family that would be considered adequate today, much less near the national median income of \$17,640 (in 1978). On many of the smaller farms, however, the income is supplemented by a large amount of income from off-farm sources.

Table 5: Farm numbers and average sizes, 1978

Size by Value of Sales	Farms		Value of Sales		Off-Farm Income	
	Number (000)	Percent	Dollars (Mil.)	Percent	Dollars (Mil.)	Percent
Less than 2,500	911	34.1	1,056	0.9	15,760	46.0
2,500 – 4,999	275	10.3	1,289	1.1	4,506	13.1
5,000 – 9,999	281	10.5	2,580	2.2	3,814	11.1
10,000 – 19,999	294	11.0	5,259	4.6	2,980	8.7
20,000 – 39,999	323	12.1	11,406	9.9	2,520	7.4
40,000 – 99,999	398	14.9	28,962	25.0	2,670	7.8
100,000 – 199,999	126	4.7	19,708	17.0	2,029 <sup>a</sup>	5.9 <sup>a</sup>
Over 200,000	64	2.4	45,413	39.3	—	—
Total	2,672	100.0	115,773	100.0	34,279	100.0

Source: ESS/USDA. (1959 Definition of "Farm")  
<sup>a</sup>Off-farm income is calculated for farms of \$100,000 in sales and over.

Table 6: Number of farms and land in farms by acre size, 1978

Acres	Farms		Land	
	Number	Percent of Total	Million Acres	Percent of Total
Less than 10	215,674	8.7	1.1	.1
10 – 49	475,815	19.2	14.3	1.4
50 – 179	814,371	32.8	93.7	9.1
180 – 499	596,482	24.0	202.8	19.7
500 – 999	215,150	8.7	161.4	15.6
1,000 – 1,999	98,602	4.0	147.9	14.3
2,000 or more	63,772	2.6	409.9	39.8
Total	2,479,866	100.0	1,031.1	100.0

Source: Adapted from the 1978 Census of Agriculture.

Acreage

An examination of farms by acreage size is also revealing. The total land in farms, about 1.031 billion acres, was distributed across the 2.5 million farms enumerated in preliminary returns from the 1978 census as shown in Table 6. Interestingly, 61 percent of the farms had less than 180 acres, the next largest one-fourth of the farms had between 180 and 500 acres, and the largest 15 percent of the farms had more than 500 acres.

In terms of acres controlled, the farmland acreage, like sales and production, is controlled by relatively few of the largest farms—6.6 percent of the farms encompass 54.1 percent of the land in farms.

Farm Income

A central consideration in farm policy traditionally has been the level of income in the farm sector. That issue merits further examination from two perspectives: the economic well-being of farm people, and the sustained economic viability of farm businesses. Are total incomes of farm people below a socially acceptable norm? Are the rates of return to investments in farm businesses sufficient for continued survival?

The economic well-being of farm people is examined first,<sup>2</sup> while the issues related to farms as businesses will be looked at later in this chapter.

The net income from farming varies widely across the various sizes of farms. It is, of course, quite small on the smallest farms. If many of the smallest places counted as farms had to rely solely on farm income for their livelihood, as was once the case, a significant problem of widespread low incomes within the farming community would be evident.



Net farm income increases as farm size increases, and it is not until a farm achieves around \$40,000 in gross sales that farm income alone *begins* to approach an amount considered adequate for an acceptable standard of living.

On farms beyond that size, the level of net farm income, from the point of view of personal well-being, is not substandard in relation to most others in our society.

These disparities in net farm income among sales-size classes have increased over the last two decades. The largest farms (over \$100,000 in gross sales) in 1960 amounted to 0.6 percent of all farms and earned 6.4 percent of the net income. By 1978, this group comprised 7 percent of all farms and had 36 percent of the net farm income. At the same time, the proportion of net farm income received by the smallest farms (under \$2,500 in sales) steadily dropped from 13.4 to 5.9 percent of the total.

It is now widely recognized that examining only the average income of farm-operator families from *farm* sources gives a misleading indication of the well-being of farm families.

As we learned in the last section, the significant incidence of off-farm income earned by farm families is a relatively new phenomenon, having grown rapidly in the last two decades. Today, in the aggregate, nonfarm income earned by farm families exceeds what they earn from farming.<sup>3</sup> Including income from all sources, the average net income per farm operator family in 1978 was almost \$23,000—30 percent more than the national median family income, and 132 percent more than the average income from farm sources (\$9,809) alone.

Off-farm income is of greater importance, exceeding farm income by several times, among those farms with sales under \$20,000. (Table 7). Off-farm income declines as a proportion of farm income as the size of farm increases—from being 10 times greater than farm income for the smaller size class to only one-fifth of farm income for the largest farms.

The addition of nonfarm income has contributed to a much more equal distribution of *total* income among farm families (Figure 6) and between farm families and the rest of the population. This underscores the close link between the economic well-being of a majority of farm families and the nonfarm economy, a link growing stronger as time progresses. When total income is compared with the median income of the total population, only farms with sales between \$5,000 and \$20,000 are slightly below that standard. These size categories are somewhat "in between," with insufficient off-farm income to live on and not selling enough to achieve adequate farm incomes.

It should also be noted that, while those with sales under \$5,000 can reach the national median income with their off-farm earnings, the farmers in the middle—\$5,000 to \$40,000 in sales—cannot, on the average, reach median income with either farm or off-farm earnings alone.

Several questions about farm families' income patterns need to be answered for both a fully definitive portrait of the sector and effective policy based on such a portrait: Are many of these smaller farms really rural residences only? Is the income from wages or salaries earned by the household head, who claims an occupation other than farming? Or do the spouse or other family members earn this income in supplementary employment? More information about the sources of the nonfarm income and the regional variations in the availability of nonfarm jobs could be especially revealing for policy purposes, if it provided insights about the motivation and aspirations of people living on the smaller farms.

Special studies were conducted to provide contemporary data of this nature on the smaller farms. Unfortunately, these surveys were not completed in time for this summary, so little definitive information on such questions can be presented. However, some insights can be gained from studies with data from varying time periods.

One that examined family incomes in 1973 focused on the level, sources, and distribution of income for families with farm income.<sup>4</sup> Four groups of rural people were examined: low-income farm-operator households, households associated with small farms, households dependent solely on farming, and households dependent primarily on off-farm income.

This research revealed that:

- Only 1 in 12 farm families depended entirely on farming for income. Of the others, almost 8 in 10 had income from wages and salaries, the most important source of non-farm income. And, generally, as total family income rose, the portion of total income from wages and salaries, rather than farming alone, rose, except at the higher income levels.

- Farm families reporting farm profits had a significantly higher average total income than families reporting farm losses. Farm losses reported were small and frequently reported by younger operators, who had higher wage-and-salary earnings and less total income from non-work sources, such as dividends, rents, and royalties.

- Regional differences in incomes were associated with nonfarm job opportunities and farm-household characteristics. Most low-income farm families were in the South and associated with the older farm households. The absence of a full-time wage earner in the household contributed to the low-income problem. Households reporting only farm income had a much higher probability of being in the low-in-

**Table 7: Off-farm income per farm operator family as a percentage of net farm income, 1960–78**

Sales class (\$)	1960–64	1965–69	1970–74	1975–78
Less than – 2,500	408	646	857	1,006
2,500 – 4,999	128	261	472	902
5,000 – 9,999	68	130	217	423
10,000 – 19,999	31	54	91	174
20,000 – 39,999	24	30	38	66
40,000 and over	17	22	17	25
40,000 – 99,999	NA	23	21	30
100,000 and over	NA	20	14	21
All Farms	89	115	104	141

Source: Adapted from *Farm Income Statistics*, U.S. Department of Agriculture.  
NA = Not available.

come category than did households reporting income from both farm and non-farm sources.

- Small farms and low-income households are not synonymous. Except for the households with farm income only, low farm income *per se* was not the sole cause of poverty.

- Families with only farm income had average farm-product sales almost four times as great as those families who had farm and nonfarm income.

- About 301,000, or 10.6 percent of the farm families, were below the poverty threshold, with the greatest concentration occurring in the South. (For the population as a whole today, an estimated 11.4 percent live in poverty.)

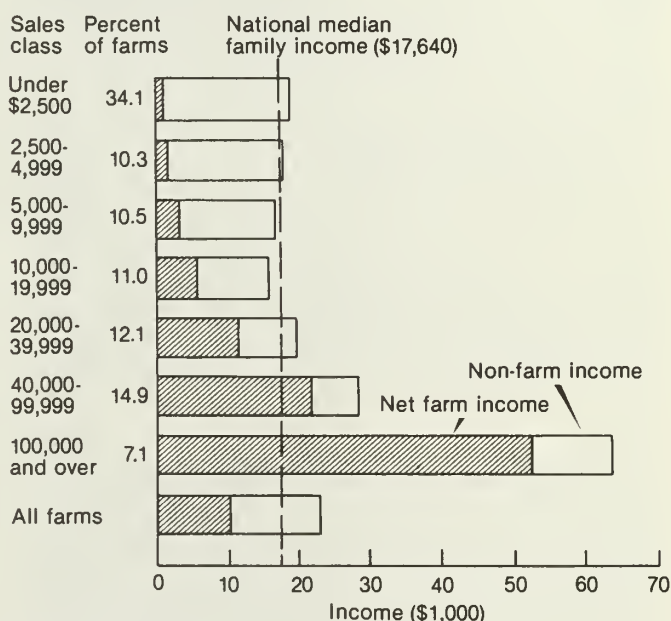
An examination of average total current annual income per farm across the sector as a whole must conclude that the incomes of most farm people are no longer “low” by any reasonable standard. This does not mean there are no farm families with low incomes or no remaining poverty, obviously. But low income and poverty seem associated with particular circumstances and geographic regions and are not pervasive across the entire farm sector, as was once the case.

While policies designed to improve farm income would benefit all farm operators to some extent, the benefits and impacts on *household* income would vary directly according to the reliance of the household upon farm income and to the size of the farm operation.

It is clear, for example, that policies designed to increase commodity prices to enhance *farm* incomes will be of little benefit to the 1.8 million farms with sales less than \$20,000. This is borne out by studies of the distribution of farm-program benefits, which reveal that the greatest proportion of the benefits accrue to the larger farmers—those with the greatest volume of production, hence the greater farm incomes.

**Figure 6**

### Income per Farm Operator Family, By Farm Size, 1978



Source: ESS/USDA.

**Table 8: Characteristics of the Nation's largest farms, 1978**

Categories (\$1,000 gross sales)	Farms		Gross Sales		Averages Per Farm	
	Number	Percent	Amount (Bil. \$)	Percent	Acres	Sales (\$)
200 – 299	39,303	1.59	9.4	8.71	1,643	240,223
300 – 499	23,911	.96	9.0	8.28	2,538	375,335
500 – 699	7,408	.30	4.3	3.97	3,438	581,533
700 – 999	4,395	.18	3.6	3.33	4,220	822,869
1,000 – 4,000	5,464	.22	10.0	9.21	5,987	1,828,183
5,000 – 9,999	456	.02	3.1	2.83	10,673	6,731,842
Over 10,000	370	.02	8.5	7.85	8,046	23,007,885
Total	81,307	3.29	47.9	44.18	2,581	589,278

Source: Preliminary data from the 1978 Census of Agriculture.

This recent research<sup>5</sup> found that, of all direct income-support payments, the smallest 50 percent of farmers by Normal Crop Acreage received 9.7 percent of the 1978 programs' payments. The largest 10 percent of the recipients (about 3 percent of the farms) received 46 percent of the funds (and more than half of the wheat and cotton payments). The national average payment was \$2,373. Averages varied by acreage size from \$852 for places under 220 acres, to \$14,234 to those with 1,000 to 1,500 acres, to \$36,005 for those with more than 2,500 acres.

### Major Categories of Farms

The diversity of farm sizes and incomes suggests that future agricultural policies will need to be based on more careful identification of problems and correct delineation of the subgroups of farms that each policy is to treat. At least three and perhaps four types of farms can be seen to have enough common characteristics to be grouped into major categories.

First are the places with little production and relatively high off-farm incomes. These may be simply rural residences and hobby farms. At a minimum, the smallest size category (under \$2,500 sales) would be included here, and probably the next size category, with sales between \$2,500 and \$5,000, could be included as well. This group, which might be labeled "rural farm residences," would encompass 44.4 percent of all places counted as farms today.

A second group, which could be called "small farms," might include the next three sales classes, up to \$40,000 in sales. Most of these farms produce too little to be able to rely fully or primarily on farming for a livelihood and must depend on supplemental, nonfarm income—but to a lesser extent than do the smallest farms.

**Table 9: Farms with over \$40,000 in sales, by type, 1974**

Type	Farms	
	Number	Percent
Cash grain	179,701	37.7
Cotton	9,500	2.0
Sugar, peanuts, potatoes, etc.	22,966	4.8
Dairy	78,083	16.4
Poultry, eggs	32,537	6.8
Horticultural	6,578	1.4
Livestock	100,036	21.0
Tobacco	8,886	1.9
Vegetable & melon	6,000	1.3
Fruit & tree nut	13,769	2.9
General crop farms	11,566	2.4
Animal specialty	1,703	0.4
General livestock farms	4,518	0.9
Not classified	1,066	0.2
Total	476,909	100.0

Source: 1974 Census of Agriculture

Farms in the third category we might call "primary farms." They are those that generate more than \$40,000 in gross sales and their operators depend primarily upon farming for their incomes. Since they produce most of the Nation's food and fiber, the actions of these farmers largely determine the effectiveness of commodity programs, including the grain-reserve program. Their managerial decisions also are significant causes of structural change in the farm sector.

These farms, and perhaps the middle group as well, are the ones of major interest for commodity policy. But this category of primary farms actually can be divided into two equally important categories—from \$40,000 to \$200,000 in sales, and those with sales above \$200,000 a year. Prelimi-





Table 10: Distribution of farms and agricultural product sales, by type of farm, 1974

Type of farm	Less than \$40,000 sales			More than \$40,000 sales			All farms	
	Number	Percent	Percent of total sales	Number	Percent	Percent of total sales	Number	Total sales (\$1,000)
Cash grain	400,024	69.0	25.9	179,506	31.0	74.1	579,«0	23,548,215
Cotton	18,848	68.6	14.4	8,622	31.4	85.6	27,470	1,724,981
Horticulture	7,130	62.5	8.0	4,286	37.5	92.0	11,416	1,165,140
Livestock	392,059	79.7	19.8	99,800	20.3	80.2	491,859	22,054,665
Dairy	116,777	60.2	27.8	77,084	39.8	72.2	193,861	9,623,312
Poultry and eggs	9,500	23.4	3.3	31,163	76.6	96.7	40,663	5,999,795
Sugar, peanuts, potatoes, etc.	43,626	66.8	0.9	21,641	33.2	99.1	65,267	5,185,796
Tobacco	74,796	89.5	55.8	8,762	10.5	44.2	83,558	1,528,268
Vegetable and melon	4,536	56.2	4.2	3,529	43.8	95.8	8,065	1,564,748
Fruit and tree nut	31,372	71.8	16.9	12,346	28.2	83.1	43,718	2,561,219
General crop farms	15,514	72.4	32.4	5,910	27.6	67.6	21,424	812,808
General livestock farms	2,147	59.1	24.8	1,487	40.9	75.2	3,634	168,656
Total of above*	1,116,329	71.1	21.1	454,136	28.9	78.8	1,570,465	75,937,603

Source: ESS/USDA.  
\*These figures may vary somewhat from similar aggregate data; the difference is due to disclosure problems.

nary data from the 1978 Census of Agriculture provide a useful overview of the 81,000 largest farms (Table 8). The most striking feature of these farms is their sheer size. These 3.3 percent of the farms produced 44 percent of the total sales. Over 6,000 of these farms had sales in excess of one million dollars each.

This latter 0.26 percent of all farms produced 19.9 percent of the gross sales—\$21.6 billion—for average sales of \$3.4 million per farm, on a land base exceeding 8,000 acres each (Table 8).

Primary Farms

The 1974 census counted 476,909 farms with gross sales of at least \$40,000. (This number increased to 588,000 in 1978). These farms accounted for 78.4 percent of total output in 1974 and likely account for a much larger share today. What do these farms produce, and how viable are they?

The Bureau of the Census classifies farms *by type* based on the Standard Industrial Classification (SIC) codes of the Department of Commerce. These codes classify a farm according to the commodity that accounts for more than 50 percent of its *gross sales*. Thirteen major farm types are delineated by the Census Bureau.

Of farms grossing over \$40,000 in sales, livestock farms—including dairy, poultry, animal specialty, and general livestock—account for 45.4 percent of the total number. Crop

farms (grains, cotton, sugar, tobacco, and general crop) make up 48.8 percent; and horticultural and various other miscellaneous types constitute the remaining 5.8 percent (Table 9).

Dairy farms, the only livestock category with a direct price-support program, alone comprise 16.4 percent. Cash grain and cotton farms, those for which the major crop commodity programs have been operated for more than half a century, are 39.7 percent of the total number of farms in this category.

The contribution to total sales by size of farms within each of these types is further revealing. As expected, production is concentrated: a relatively small number of producers account for a much larger proportion of total production (Table 10). Concentration varies by types from the larger sugar, peanuts, and related farms, which produce virtually all the given commodity, to tobacco growing, where the larger farms produce 44 percent of the output. Among grain farms, the larger farms (31 percent of the cash grain farms with over \$40,000 sales, but only 7.3 percent of all farms) make 74.1 percent of total sales.

**Table 11: Grain and cotton farms with over \$40,000 in sales, by state, 1974**

State	Wheat	State	Corn/soybeans	State	Cotton
Kansas	12,957	Illinois	26,328	Texas	2,250
North Dakota	10,952	Iowa	23,446	California	1,148
Washington	3,447	Nebraska	11,513	Arkansas	933
Montana	4,209	Indiana	11,271	Arizona	620
Oklahoma	3,909	Ohio	7,362	Mississippi	1,953
Total	35,474	Total	79,920	Total	6,934

Source: 1974 Census of Agriculture

**Table 12: Average characteristics of cash grain and cotton farms with over \$40,000 in gross sales in predominant wheat, corn/soybean, and cotton-producing States, 1974**

Item	Wheat	Corn/Soybean	Cotton
		(Number)	
<b>Farms</b>	35,474	79,920	6,934
		(Acres)	
Land inventory:			
Acres operated	1,728	565	1,254
Cropland acres	1,199	475	982
Acres harvested	802	431	801
Cropland not harvested	397	44	181
Pasture, range & woodland	490	74	221
Other land	39	16	51
Tenure			
Acres owned & operated	940	241	634
Acres rented in	839	337	696
Acres rented out	51	13	76
Crop enterprises:			
Wheat	540	40	38
Corn	40	213	4
Soybeans	15	148	109
Other grains	51	11	72
Hay & fieldseeds	52	16	34
Other crops	102	3	35
Cotton	—	—	509
		(Dollars)	
Value of sales:			
Grain	77,414	74,630	30,806
Fieldseeds and hay	1,770	445	8,492
Other field crops	1,629	302	2,538
Vegetables	16	224	2,808
Fruit	3	8	900
Other crops	820	619	134,078
Livestock	10,090	11,865	3,488
Total	91,742	88,093	183,110

Source: 1974 Census of Agriculture.

**Table 13: Average financial characteristics of cash grain and cotton farms with over \$40,000 in gross sales in predominant wheat, corn/soybean, and cotton-producing States, 1974**

	Wheat	Corn/Soybean	Cotton
	(Dollars)		
<b>Balance sheet</b>			
Assets	318,310	255,158	433,180
Debt	37,609	30,555	71,907
Equity	280,701	224,603	361,273
Percent equity	88.2	88.0	83.4
<b>Current income</b>			
Gross receipts	91,661	88,095	183,111
Total expenses	56,329	53,038	147,899
Net income to equity	35,332	35,057	35,212
<b>Other income</b>			
Net farm related	1,278	2,759	3,289
Nonfarm	2,708	2,761	4,178
Total	3,986	5,520	7,467
Total income (all sources)	39,318	40,577	42,679
Total income (farm sources)	36,610	37,816	38,501
Real estate asset appreciation	16,582	9,244	- 14,967
	(Percent)		
<b>Returns to equity from:</b>			
Annual farm income	13.04	16.84	10.66
Real capital gains	5.91	4.12	- 4.14
Total	18.95	20.96	6.52

Source: Calculated from 1974 Census of Agriculture data.

Note: The financial characteristics were determined in the following manner: Gross receipts are equal to total market value of agricultural products sold. Total expenses were calculated weighting the average variable costs for farms with gross sales of more than \$100,000 with those of farms having gross sales of \$40,000 to \$100,000. Wheat farms were those classified by the Census of Agriculture as cash grain farms in the predominant wheat growing states of Kansas, North Dakota, Washington, Montana, and Oklahoma; corn/soybean farms were cash grain farms in the predominant corn/soybean states of Illinois, Iowa, Nebraska, Indiana, and Ohio; and cotton farms were listed as cotton farms in Texas, California, Arkansas, Arizona, and Mississippi. Total variable costs include cash rent, taxes, interest, depreciation, as well as the customary cash items. In addition, a management charge, representing five percent of total sales and a labor charge calculated from crop production budgets were included. Returns to equity were calculated by taking the ratio of total income from farm sources to equity and the ratio of real estate asset appreciation to equity.

To delineate a set of primary grain farms for analysis one must identify the specific grain crops produced. The census data do not permit such an identification directly, so this must be done indirectly. One way is to identify the major grain-producing States by type of grain produced (from census acreage data) and assume that farms in these States produce these grains. Using this procedure, 115,394 primary grain farms were found in the five major wheat- and corn-producing States, with the remaining 64,112 primary grain farms spread throughout the United States (Table 11).

Having identified these farms, some notion of the nature of these farming operations can be obtained by looking at *averages* for these farms (Table 12; and, again, recognizing the limitations of averages in the diverse agriculture of today). Using census data, current income and capital-gains

returns have been computed and compared to the operator's average equity in the farm business to show the average financial situations of these farms (Table 13). Returns vary by State, but *total* rates of return are comparable to returns in the nonfarm economy in 1974. Likewise, total income (farm and nonfarm) accruing to farm operator families is comparable to the median family income for 1974.

Again, these are *average* situations. The average amount of operator equity in these farm businesses is large, and cash-flow requirements are much less stringent than for a renter or beginning farmer who is more likely to have a much smaller equity.



The averages also conceal some of the circumstances that drive structural change. A farmer owning 1,000 acres of prime midwestern farmland that was purchased 20 or even 10 years ago, for example, not only has obtained large gains in net worth (which can be used as loan collateral), but also has lower cash obligations to be met out of annual receipts. That large equity and cash flow can be used to outbid other would-be purchasers of nearby land for sale. As explained in Part II of this report, the Federal income tax laws also work to reduce the real cost of such investments to high-income producers, increasing their competitive strength.

### The Economic Viability of Farm Businesses

The economic viability of farm businesses is important to farm policy and to any study of the structure of agriculture because it influences the motivations of firms, whether capital and other resources will be attracted to the sector and under what circumstances, the technological progressiveness of the sector, the responses of individual firms and the overall sector to economic conditions, their resiliency under adverse conditions, and which firms will survive at the expense of others.

In the long run, the economic health of the sector determines its productive capacity and thus the supply and cost of food. The distributive characteristics of that health will also play a role in determining the eventual structural characteristics of the farm sector. In the short run, the issue is one of capability to adjust to immediate economic conditions, such as volatile demand and the resulting wide swings in prices and incomes.

In economic terms, a business firm is viable over the long run if it generates enough income to pay all of the factors of production employed—land, labor, capital and management—a rate of return sufficient to hold them in the particular business endeavor. Stated another way, either the rate of return must be comparable to rates the resources could earn elsewhere or, under certain specific assumptions, such as the ability of those factors to be freely moved, they will shift to another endeavor where returns are greater.

Such a shift is precisely what happened in agriculture. For several decades, agriculture's annual income was insufficient when distributed among all resources to provide returns comparable to those earned elsewhere. A "low" rate of return resulted, and the excess resources (primarily labor) gradually shifted to other sectors of the economy where the earnings were greater. But, in examining today's agriculture, how do farm resource earnings compare with the non-farm sector?

### Rates of Return for the Farm Sector

The Department of Agriculture has sufficient data to compute returns to the farm sector back to 1940. Estimates have been calculated for the rate of the return to equity (the current market value of assets, minus the outstanding debt) in agricultural production assets from current income (gross receipts minus production expenses, including interest paid, operator and family labor, and asset appreciation) (Table 14). Several observations and references may be drawn from these estimates<sup>6</sup>:

- Higher returns in the form of current incomes during the forties reflect the high commodity prices resulting from wartime conditions. Total returns were relatively stable through the fifties and sixties. The seventies boom is reflected in both current income and capital returns.
- The return in the form of capital gains reflects mainly increases in the value of the largest production asset, land. These returns were relatively stable through the immediate post-World War II decade and the sixties, but then increased rapidly, reflecting the rapid escalation in land prices that began after 1972.
- The average *total* return to equity is appreciably higher for the seventies than in the previous three decades (excluding the war years of the early forties).

Total returns to agriculture have increased markedly in the seventies, yet this information tells us little about the balance between returns to resources in agriculture and the rest of the economy unless we compare agricultural earnings with earnings elsewhere. Such comparisons have their limitations, but some useful insights can be gained.

Returns to current income and capital gains from common stocks and long-term Government bonds are frequently viewed as representative of business investment earnings in the nonfarm economy. In Table 15, estimates for stocks and bonds are compared with estimates of farm sector earnings. While again recognizing that they are not strictly comparable, these estimates also permit some interesting observations:

- Rates of return to current income among all three investments do not differ greatly over the entire 30-year period, and especially not in the past 15 years. Long-term bonds have consistently but not greatly outperformed the other two. However, farm income is the most volatile of the three.
- Capital-gains returns to equity are greater for stocks and farm assets than long-term bonds. Stocks outperformed farm assets in the fifties and sixties, but the reverse occurred in the seventies. Interestingly, farm-sector capital-gains returns are much more stable than such returns to the other two investments.
- During the past 15 years, rates of total returns to farm investment equity have substantially exceeded investments in common stocks and bonds. Although annual farm income is the most variable, it is more than offset by the

**Table 14: Returns to investment equity in farm production assets, selected periods, 1940–79**

Period	Equity in assets	Residual income to equity	Real capital gains	Rate of return to equity investment from		
				Current income	Capital gains	Total
		(Billion \$ 1967)			(Percent)	
1940–44	81.3	6.3	6.2	7.8	7.4	15.2
1945–49	115.8	8.3	1.1	7.2	1.0	8.2
1950–54	133.1	6.4	0.8	4.9	0.8	5.7
1955–59	144.5	4.1	6.9	2.8	4.8	7.6
1960–64	161.8	5.3	5.0	3.3	3.1	6.4
1965–69	178.3	7.3	5.4	4.1	3.1	7.2
1970–74	192.0	11.8	13.2	6.1	7.0	13.1
1975–79	241.4	8.8	19.6	3.7	8.2	11.9

Source: *Balance Sheet of the Farming Sector*, (1979 supplement), U.S. Department of Agriculture.

Note: Farm production assets are valued at current market prices deflated to a constant dollar basis. Residual income to equity equals income to production assets minus interest on real estate and non-real estate debt.

**Table 15: Rates of return to stocks, bonds, and farm assets, selected periods, 1950–79**

Period	Current income			Real capital gains			Total		
	Common stock	Long term bonds	Farm assets	Common stock	Long term bonds	Farm assets	Common stock	Long term bonds	Farm assets
1950–54	5.85	2.61	4.95	11.95	–1.69	3.28	17.53	0.92	8.23
1955–59	3.94	3.38	3.18	13.12	–4.65	4.02	17.06	–1.27	7.19
1960–64	3.20	4.00	3.61	7.45	–1.49	2.42	10.65	2.51	6.02
1965–69	3.18	5.01	4.46	1.61	–9.09	2.48	4.79	–4.08	6.94
1970–74	3.47	6.25	6.26	–8.66	–8.65	6.15	–5.19	–2.40	12.41
1975–79	4.68	7.49	4.50	–4.09	–12.06	5.10	0.59	–4.57	9.60

Source: ESS/USDA.

less variable capital-gain returns. Thus, the risk in farm investment has been substantially lower than the risks of investing in the other two.

Over all, these data suggest that, to the extent that stocks and bonds are good proxies for both current-income and capital-gains returns, the agricultural sector lagged until the late sixties but today enjoys comparable or superior rates of earnings.

These data also suggest that the earnings performance of agricultural land investments could have major future implications. Rising land prices are frequently noted as tending to disenfranchise younger and lower-equity farmers as bidders in the market and reinforcing the concentration of land purchases among the more established farmers, who can supplement the earnings from newly purchased land in order to realize the capital gains later. This, of course, holds

their savings together in real terms and provides a net surplus when land prices rise faster than general inflation.

The profitability of farm assets, particularly land, has a number of longer-term implications for the farm sector that are explored in more detail in Part II of this report. Briefly stated, as long as farm assets are at least as attractive *an investment*, particularly in times of inflation, as nonfarm investment instruments (such as stocks and bonds), interest will increase on the part of nonfarm investors, large institutions, and even farmers in accumulating farm assets for long-term appreciation and capital-gains purposes, rather than for earning current farm income by operating the farm.

**Table 16: Variation in farm income and product prices, selected periods, 1955–78**

Item	Coefficient of Variation <sup>1</sup>		
	1955–63	1964–71	1972–78
Index of prices Received			
All products	2.6	5.9	14.6
Crops	2.9	3.8	18.9
Livestock	5.5	11.3	13.7
Cash receipts			
Crops	10.4	9.1	20.6
Livestock	8.3	14.6	15.7
Personal income received by the farm population			
Farm income less Government payments	9.4	18.6	24.3
Farm income	6.3	14.1	21.7
Nonfarm income	12.5	16.0	15.7
From all sources	5.5	12.1	13.9

Source: ESS/USDA.

<sup>1</sup> The coefficient of variation is the standard deviation of the data series divided by the mean and expressed as a percent.

As that happens, the lines of distinction between farmers and people who own farm assets will become increasingly blurred. This fact has implications for the rationale of our present farm programs, because, for example, the benefits of the farm programs, tied to production volume from a given acreage, are capitalized into land values and thus accrue to landowners (farmers and nonfarm investors) rather than to farm operators *per se*.

The most significant single collection of savings in this country is pension funds, which have recently been badly battered by inflation. A midwest group planning to invest pension funds in farmland has been the subject of recent news-media attention and a congressional hearing. There are likely to be more such ventures in the future. A major economic factor in this decade could be efforts by all sorts of groups outside the farm establishment to participate in the kinds of capital-gains returns occurring over the past decade, and that could be a major factor in determining how future policy will work. This would mean that it is not only young farmers who will have difficulty in getting established as landowners, but older farmers will also meet increased competition from bidders with large amounts of resources to invest.

### Variations in Incomes and Returns

Two important facets to any discussion of rates of return from annual income and from asset appreciation are the amount and the *variability* of the rate of return. Total income to farm families in recent years has been shown to compare favorably to the national median family income. The total rate of return to investment in farm businesses since about 1970 compares favorably to rates that could be earned from

investments in the nonfarm economy. What about the variability or stability of current income and those investment earnings?

Some insights are obtained by measuring the variability in commodity-group prices and income for three periods (Table 16). These data suggest:

- The periods of 1955 to 1963 and 1964 to 1971 were stable relative to the period 1972 to 1978—when variability in prices received for all products increased sixfold; for crops, over sixfold, and for livestock, over twofold.
- The variability in farm income was over three times as great in the seventies as in 1955-63. Income variability in all periods was reduced by Government payments and reduced further when income from nonfarm sources was included.
- In contrast to the instability in farm prices and incomes, nonfarm income received by the farm population was relatively stable, primarily reflecting economic conditions in the nonfarm economy.

As a whole, those figures confirm that the volatility or instability of farm income from one year to the next has increased *for the entire sector* in the last decade.

Looking beyond sector aggregates, we examined income to the farm-operator family by source and size of farm for the sixties and the seventies (Table 17) and observed that:

- Variability in farm income increased substantially for farms of all sizes in the seventies, compared to the sixties.
- Farm family income varies more than twice as much for farms with more than \$40,000 in sales than for those with less gross income. This difference is due to the larger



**Table 17: Variability in farm income per farm operator family by size of farm, selected periods, 1960-78**

Sales class (\$)	Coefficient of variation			
	Net farm income		Total income	
	1960-72	1973-78	1960-72	1973-78
Less than - 2,500	8.5	10.8	33.2	15.6
2,500 - 4,999	6.9	16.2	30.6	14.6
5,000 - 9,999	4.4	16.0	23.9	12.2
10,000 - 19,999	6.8	15.7	18.9	7.3
20,000 - 39,999	11.9	13.7	15.0	7.7
40,000 - 99,999	12.9	15.2	8.6 <sup>a</sup>	10.7
100,000 and over	19.6	32.0	16.3 <sup>a</sup>	26.5

Source: ESS/USDA.

<sup>a</sup> For 1965-72.

**Table 18: Cash production expenses as a percentage of cash receipts, selected periods, 1935-78**

Period	All farms	Farms with Gross Sales of		
		Less than \$40,000	\$40,000 to \$100,000	More than \$100,000
		(Percent)		
1935-39	59.8	NA	NA	NA
1940-45	56.3	NA	NA	NA
1946-49	53.4	NA	NA	NA
1950-54	58.7	NA	NA	NA
1955-59	63.2	NA	NA	NA
1960-64	67.1	60.2	71.8	85.6
1965-69	68.5	59.6	69.4	84.8
1970-74	67.4	55.9	63.9	80.6
1975-78	72.1	57.4	63.5	81.3

Source: ESS/USDA.

NA = Not available.

Note: Cash receipts include marketings from livestock and crops, Government payments, and income from recreation, machinery hire, and custom work. Cash expenses include operating expenses, taxes, interest on farm mortgage debt, and rent to non-operator landlords

proportion of total income from farm sources for the larger farms.

- For farms under \$20,000 in gross sales, total income was highly stable. As this income is mainly from wages and salaries, household incomes on these farms are little affected by farm-income variability.

Thus we can conclude that, as farm income is proportionally a smaller part of total income on small farms than on large farms, small farms are less vulnerable to fluctuations in farm earnings.

The implications of this increased economic instability in the farm sector are especially significant for primary farms and

for those smaller farms that have little nonfarm income.

These larger farms are dependent on purchased inputs from the nonfarm sector, and some of them have large fixed annual cash obligations. This means that the large farms are less able to "tighten their belts," take a lower return on their labor and capital, and weather the bad times than the modern part-time farmers.

For example, the ratio of cash production expenses to gross farm income has trended upward since World War II (Table 18). The increased reliance on purchased inputs and borrowed capital varies by farm size, and the ratio is much higher for the larger farms. Likewise, the debt-to-asset ratio is much higher for the larger farms, which shows the added cash requirement for annual debt servicing (Table 19).

**Table 19: Debt to asset ratio, by farm size, selected years, 1960–78**

Year:	All Farms	Farm Size by Sales Classes						
		Less than 2,500	2,500 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 to 39,999	40,000 to 99,999	100,000 and over
1960–64	13.5	8.1	10.2	(Percent) 12.9	15.0	15.0	15.2	18.8
1965–69	16.3	9.2	9.4	14.4	17.8	17.8	19.2	23.4
1970–74	16.4	5.1	8.8	11.5	15.5	17.8	19.7	24.9
1975–78	16.0	4.7	6.9	7.6	12.2	14.9	18.2	24.9

Source: ESS/USDA

**Table 20: Sensitivity of annual net income to changes in production expenses**

Item	Ratio of Production expenses to cash receipts		
	70%	85%	90%
		(Dollars)	
Gross receipts	100	100	100
Production expenses	70	85	90
Net cash income	30	15	10
10 percent increase in production expenses	77	94	99
Net cash income	23	6	1
		(Percent)	
Decrease in net cash income	23	60	90

This reduced financial flexibility has important implications for the cash-flow situation—and needs—of what we call the primary farms, those producing most of the Nation's food and fiber.<sup>7</sup> The consequences of that higher ratio of cash production expenses to gross receipts, when it comes to variations in net income, is a point quickly made. Any particular increase in production expenses, or reduction in cash receipts, is much more severe the greater the farm's dependence on purchased inputs and the greater its fixed-payment obligations. For example, if a farm has \$100 in gross receipts and expenses of \$70, and expenses increase 10 percent, then net cash income is reduced by 23 percent (\$7). But if its expenses are \$90, a 10 percent increase in expenses cuts net cash income by 90 percent—from \$10 to \$1. (Table 20)

The import of this is that more and more farms are vulnerable at a time when the increased dependence on foreign markets means greater potential variability in market prices, hence greater variability in cash receipts.

### Efficiency and Resource Use

In the face of tightening world supply and demand balances and the resulting pressure on our land, water, mineral, and energy resources, it is imperative that public policies enhance the efficiency of use of those resources. This pressure is complicated by rising real costs of energy and perhaps capital, because the great surges in productive capacity over recent decades have resulted from adoption of capital- and energy-intensive technologies. Further, the adjustment to changing resource supplies and costs will have to be made in markets that are likely to be frequently confused by highly volatile commodity prices and thus returns to those resources.

Efficiency of resource use is relevant to farm structure in two major ways:

- How farming is organized into sizes and types of farms affects productivity and efficiency of resource use; and,
- The changing relative supplies and costs of resources influence the structure and organization of farming through adjustments in technology, and therefore changes the distribution of costs among farms.

**Table 21: Land in farms, selected years, 1900–78**

Year	Land in farms <sup>a</sup> (million acres)	Change (percent)
1900	839	—
1910	879	+ 4.8
1920	956	+ 8.8
1930	987	+ 3.2
1940	1,061	+ 7.5
1950	1,159	+ 9.2
1954	1,158	0.0
1959	1,120	– 3.3
1964	1,110	– 0.9
1969	1,062	– 4.3
1974	1,017	– 4.2
1978	1,031	+ 1.4

Source: ESS/USDA and 1978 Census of Agriculture

<sup>a</sup>Data are not adjusted for changes in enumeration methods and farm definitions.

In the past, much of the gain in productivity and efficiency of resource use has come from consolidation of smaller farms made inefficient by advancing technology. Two questions arise: have the efficiency gains from consolidation been largely exhausted, and how do the changes in energy costs, in resilience in the face of instability, and other aspects affect the relative efficiency and viability of smaller farms, especially part-time farms?

Also in the past, large productivity gains have come from replacing labor with machines and chemicals. Both of the latter are energy- and capital-intensive. Labor-saving devices did not always mean increased production. Without abundant supplies of unused land and cheap energy and capital, should the focus in technology shift to enhancing output through higher yields and *total* resource efficiency?

In this section, we review the available information on the land used in farming, what has happened to productivity of resource use, the economics of farm size, and the implications of these aspects for farm policy.

### Land in Farms

The total land area in farms has changed relatively little in the 20th century (Table 21). Land development was still being encouraged early in the century, with over 150 million acres added to farms between 1910–40. Land in farms continued to increase slightly until 1950 and has declined somewhat since.

Land in farms is used for crops, pasture, fallow, forests, lots, and the farmstead itself. Total land used for crops was greatest just after World War II and was least in the late six-

ties and early seventies, when large acreages were idled by Government programs.

Interestingly, the amount of land used for crops in 1979 was the same as in 1929 (Table 22). Yet many of these acres were significantly more productive, owing to improvement through capital investment in irrigation, drainage, forming, conservation practices, and other measures.

The total cropland base (excluding pasture land) is slightly larger than the total used for crops in any one year, suggesting some additional acreage (undoubtedly of lower quality) may be available for cropping if economic conditions warrant.

While there is general agreement that some relatively small additional acreage exists which could be brought into production rather quickly, there is much less agreement on the quantity that could eventually be used for crops. The estimates range from a few to several million acres of varying capabilities. However, it is clear that, the larger the amount, the greater the investment required to make that land suitable for sustained production. This investment, of course, will occur when economically feasible—when the expected future stream of real returns to agricultural production justifies the commitment of the capital to this particular use. Greater public awareness of the fragility of the entire natural-resource base and its relation to the quality of the environment has made the future productive capacity of American agriculture a much more immediate issue than it was a decade ago.

### Agricultural Productivity

The process of economic development in societies historically has been characterized by changes in sector productivity that permit the release of labor from food production for subsequent employment in the nonfarm economy.

This was true, of course, for the United States, after technological innovations and their adoption led to large numbers of people leaving farming. Growth in the nonfarm economy was, at most times, sufficient to provide jobs for them. It was this problem of transition—this emergence of excess labor in agriculture to be eventually absorbed elsewhere in the economy—that formed the basis for the “farm problem” that endured for several decades. This “labor pool” was an important source of aggregate growth for the nonfarm economy; labor with low value in agriculture shifted to where it was more highly valued economically.

Further perspective can be gained by reviewing the use of labor and other resources and the measures of changes in productivity in the farm sector.



**Table 22: Major uses of land, selected years, 1924-79**

Year	Cropland harvested	Crop failure	Fallow	Total used for crops	Idle	Pasture	Total cropland excluding pasture	Acres idled by programs
(Million Acres)								
1924	346	13	6	365	26	NA	391	0
1929	356	13	10	379	34	NA	413	0
1934	296	64	15	375	40	NA	415	0
1939	321	21	21	363	36	NA	399	0
1944	353	10	16	379	24	NA	403	0
1949	352	9	26	387	22	69	409	0
1954	339	13	28	380	19	NA	399	0
1959	317	10	31	359	33	66	392	22
1964	292	6	37	335	52	57	387	55
1969	286	6	41	333	51	88	384	58
1972	289	7	38	334	51	NA	385	62
1973	316	5	31	352	32	NA	384	19
1974	322	8	31	361	21	83	382	3
1975	330	6	30	366	NA	NA	NA	2
1976	331	9	30	370	NA	NA	NA	2
1977	338	9	30	377	NA	NA	NA	0
1978	331	7	31	369	NA	NA	NA	18
1979	342	7	30	379	NA	NA	NA	12

Source: ESS/USDA.  
NA = Not available.

**Table 23: Index measures (1967 = 100) of resource use, output, and farm productivity, 1920-79**

Year	Selected inputs				Output			Productivity (output/input)		
	All inputs	Labor	Real estate	Mechanical power and machinery	Livestock	Crops	Total	All inputs	Land <sup>a</sup>	Labor
1920	98	341	102	31	44	65	51	52	61	14
1930	101	326	101	39	54	59	52	51	53	16
1940	100	293	103	42	60	67	60	60	62	20
1950	104	217	105	84	75	76	74	71	69	34
1960	101	145	100	97	87	93	91	90	89	65
1970	100	89	101	100	105	100	101	102	104	115
1971	100	86	99	102	106	112	110	110	112	128
1972	100	82	98	101	107	113	110	110	115	136
1973	101	80	97	105	105	119	112	111	116	130
1974	100	78	95	109	106	110	106	105	104	136
1975	100	76	96	113	101	121	114	115	112	152
1976	103	73	97	117	105	121	117	115	111	162
1977	105	71	99	120	106	130	121	114	117	173
1978	105	67	97	125	106	131	122	116	121	182
1979	108	66	96	129	110	144	129	119	130	198

Source: ESS/USDA

<sup>a</sup> Measured as crop production per acre.

The *total* inputs committed to agricultural production have increased only slightly—10.2 percent—since 1920 (Table 23). But the composition and, undoubtedly, the quality of those inputs has changed markedly.

The amount of land committed has declined only slightly—5.9 percent—but the substitution of capital for labor has been dramatic, making agriculture today one of the most capital-intensive sectors of the economy.

Total factor productivity—changes in output obtained from *all* inputs—has risen 129 percent since 1920. On the average, 2.19 percent more production has been obtained each year with an equivalent amount of inputs.

The *rate* of productivity for two of the major inputs, land and labor, presents an interesting picture, too.

The productivity of land, measured as crop production per acre, more than doubled (rising 113 percent) over the six decades from the twenties through the seventies, increasing most rapidly in the fifties.

The productivity of labor rose a phenomenal 1,314 percent, an average of 22.3 percent per year. This rapid rate of growth would be expected in an industry with more labor than could be fully employed and the surplus moving out, particularly when the sector was also experiencing extensive technological change. The substitution of capital that was part of the technological revolution made the remaining labor more productive.

Whether total productivity growth in agriculture is slowing perceptibly is a subject of some controversy. The inability to delineate weather effects and the crudeness of current productivity measures, owing to definitional, procedural and data limitations, preclude definitive judgments. However, if the rate of productivity growth is indeed slowing, with the readily available land resource (the other source of increased output) largely committed, then the prospects for future expansion of production are not bright—absent a major breakthrough in production technology. This comes at a time when global food demand and demand for U.S. exports are quite likely to grow, as noted in Chapter 1.

## Economies of Size

The conventional wisdom has been that technological advancements over time have created potential efficiencies that could be “captured” more effectively by farms’ growing larger. That is, in substituting newer machines for labor, the investment costs per acre or per unit of production can be reduced, to a point, by increasing the size of the operation. Among the cumulative impacts would be consolidation of farms and a reduction in unit costs of production—per bushel, bale, pound, et cetera. The cost of food would be reduced for consumers.

Consumers have benefited from the past gains in efficiency in agriculture that have lowered relative food costs at the same time they have brought reduced numbers of farms. But, the question now arises as to whether, given existing technology and relative prices, further significant efficiency gains can be realized from continued consolidation of farms? Is this farm size/food price trade-off still valid? Have the primary farms realized most of the attainable economies of size?

Again, any generalizations are severely limiting—each farm situation is different. Moreover, there are conceptual and empirical difficulties in determining economies of size. For example, how does one value operator labor, land, and management costs, difficulties peculiar to agriculture?

Nonetheless, we reexamined technical economies of size, and qualified estimates of least-cost farm sizes for seven farming situations have been developed.

These estimates bore out previous studies that found unit costs to fall rapidly as farms grow from relatively small sizes, and to then remain relatively stable. That is, *most* of the technical economies of combining various amounts of inputs are attained at relatively small sizes (Table 24). Note that 90 percent of the available technical economies of size can be captured by relatively small farms but achieving the last 10 percent requires that farms *more than double* in size.

There may be significant *market* economies in the purchase of inputs and sale of outputs that can be achieved by further growth of the firm. To the extent that these market economies result in real savings in the cost of providing these farm services, they contribute to lower food costs for consumers. Studies underway to identify and evaluate these market economies will be available next spring.

**Table 24: Least cost farm sizes for various farming situations, 1979**

Region and farm type	Size at which 90 percent of economies are attained		Size at which 100 percent of economies are attained	
	(Sales (\$))	(Acres)	(Sales (\$))	(Acres)
Northern Plains/wheat-barley farm	13,000	175	105,000	1,475
Pacific Northwest/wheat-barley farm	54,000	450	156,000	1,890
Corn Belt/corn-soybean farm	60,000	300	145,000	640
Southern Plains/wheat-sorghum farm	28,000	400	100,000	1,490
Delta/cotton-soybean farm	47,000	335	122,000	1,237
Southern High Plains/cotton-sorghum farm	58,000	395	175,000	970
Southeast/peanut-soybean-corn farm	55,000	143	130,000	399
Average (arithmetic) of seven farms	45,000	314	133,000	1,157

Source: ESS/USDA.

How do the major-commodity farms in the principal producing states compare on average with the least-cost sizes noted above? Again, the comparison is limited: the census data are for 1974, and data on the seven farming situations are for 1979. If the 1974 situations are adjusted to 1979 dollars, some notion of relative magnitudes can be gained. The comparison in Table 25 would suggest that all primary farms have attained a size at which 90 percent of the technical economies can be attained, and many approach the size at which 100 percent of the economies may be achieved.

Recent research explored fundamental questions about causes of structural change in farming, specifically focusing on the role of economies of size.<sup>8</sup> This research suggested that:

- The increasing average size of farms does not necessarily imply the existence of attainable economies of size. It only implies the absence of significant *diseconomies* of size.
- Growth in farm size may be due to increasing per capita income in the nonfarm sector, and the farm size needed to obtain comparable incomes.
- Based on the observed diversity of farm size, it may be that no significant economies of size exist in agricultural production; any enterprise that exhibits significant economies of size breaks away from agricultural production to become a separate industry.

It could also be suggested that, historically, it has been more common that economies of size have resulted in "functions" or "operations" breaking away from farming (for example, into marketing and processing of products), rather than in greater production.

### Links Between Size and Production Costs

A separate issue related to the efficiency question, is the relationships among farm size, cost of production, and the distribution of program payments. It is important, at the minimum, because the *national average* unit cost of production for program commodities is the basis for determining the benefits in most present farm programs.

The general relationship is that the production costs per bushel, pound, or hundredweight decline as farm size increases, up to some point.

It has been suggested that farms which specialize in production of a commodity in a region particularly suitable for that production, and which have reached a size indicated above, would be likely to have unit costs well below the *average* costs of all farmers producing that commodity in tandem with other commodities or also specializing.

Another element to keep in mind is that the vast majority of payments from the programs go to these primary farms because of their *volume*.

Target prices for grains and cotton were initially established and are adjusted annually in relation to *national average* costs of production on essentially all the acreage on which the particular crop is grown. This means that high-cost producers and high-cost regions are blended into the average with low-cost producers from low-cost production areas.

Direct income-supplement payments are made under the programs when the average market price for the first months of a new season fall between the target and the lower price-support loan rate on the commodity. The rate of payment is the per-unit difference between the market average and the target.



**Table 25: A comparison of Census averages with efficient farm sizes**

Primary farms	1974 Census average cropland acres	Acre size where specified percent of economies are realized		
		100%	90%	
Wheat farms:				
Kansas	1,003	1,490	400	
North Dakota	1,214	1,475	175	
Washington	1,470	1,890	450	
Montana	1,853	1,475	175	
Oklahoma	868	1,490	400	
Corn/soybean farms:				
Illinois	472	640	300	
Iowa	401	640	300	
Nebraska	638	NA	NA	
Indiana	478	640	300	
Ohio	464	640	300	
Cotton farms:				
Texas	1,019	970	395	
California	925	NA	NA	
Arizona	890	NA	NA	
Arkansas	823	1,237	335	
Mississippi	1,078	1,237	335	
Primary farms	1974 Average gross sales	1974 gross sales in 1979 dollars <sup>a</sup>	Gross sales to attain percent of economies	
			100%	90%
Wheat farms:				
Kansas	93,432	137,649	100,000	28,000
North Dakota	82,292	121,237	105,000	13,000
Washington	131,930	194,367	156,000	54,000
Montana	88,248	130,012	105,000	13,000
Oklahoma	80,945	119,253	100,000	28,000
Corn/soybean farms:				
Illinois	90,904	133,925	145,000	60,000
Iowa	83,349	122,794	145,000	60,000
Nebraska	90,229	132,930	NA	NA
Indiana	91,796	135,239	145,000	60,000
Ohio	84,162	123,992	145,000	60,000
Cotton farms:				
Texas	93,510	137,764	175,000	58,000
California	360,065	530,468	NA	NA
Arizona	306,015	450,839	NA	NA
Arkansas	124,310	183,141	122,000	47,000
Mississippi	172,771	254,536	122,000	47,000

Source: ESS/USDA and 1974 Census of Agriculture.

NA = Not available.

<sup>a</sup>The 1974 dollar sales estimates were inflated to 1979 dollars by the Consumer Price Index.

To whatever extent the average cost and the resulting target price exceed the cost of the low-cost producers in the major regions for the commodity, the target-price system provides what is usually referred to as a windfall gain, if payments are triggered that season. At the same time, to the extent that high-cost producers outside the major regions for the crop have expenses exceeding the average and the target price, the programs provide insufficient benefits to them in comparison to the others.

The major impact—without judging the propriety or equity of the imbalance—is the capitalization of windfall benefits into capital assets, primarily into land. The greater equity and cash flow of an existing operation, as a result, can lead to rising land prices as its owners seek to expand by consolidating nearby farms.

### **After the Farm Gate**

Any profile of American agriculture would be incomplete without some sketching of those who buy from farmers and the processing and distribution segments of the food system. That marketing system accounts for the vast majority of the costs ultimately paid by consumers for food.

The distinction between farming and marketing was once clear. But the boundaries have become blurred with the evolution of the entire food system. Today, the links between farming and the subsequent stages of the food system are complex and growing more so.

The structural links run two ways: changes in the economic organization of farming provoke accommodating changes in the marketing institutions; changes in consumer demands, product characteristics, and the economic organization of markets impose constraints on the farming sector and force it to change. The impacts of those changes—in both directions—may not be equitably distributed. Thus, to fully understand problems in the farm sector, we must understand its position in the total food system.

We begin with the first markets for the raw farm products on their way to becoming food and fiber for domestic and foreign customers.

### **Food Processing and Distribution**

Changes in the number and sizes of initial buyers of farm products have paralleled the changes in farm numbers and average sizes—fewer buyers, larger buying firms. One result has been, obviously, increased concentration at the first-handler level, which, in turn, has affected the structure of the farm sector.

Increased concentration at this level exerts several forces that may influence farm structure:

- A tendency toward a market in which there is only one or a few buyers for the products of several sellers leads to increased cost-and-profit margins for handlers, resulting in lower prices to the farmers. This, in turn, will hasten the exit of marginal producers.
- The procurement methods and technology for handling goods of the large buyers may favor larger producers.
- There may be incentives related to size and volume for first handlers which encourage them to use forms of coordination—between themselves and producers—that favor larger farms as suppliers. Some of the forms of coordination being used include contracts and direct ownership of producing units.

Conglomeration—the formation of superfirms with many unrelated divisions—often follows concentration at the first-handler level. This has additional implications for farm structure. Corporate decision-makers comparing profit statements of their conglomerate divisions have shown a tendency to spin off integrated processing operations closest to farmers, for example. Many large companies have dropped their vegetable canning and freezing operations. They are less profitable, and the firms can sometimes use their market power to play small processors off against each other and thus obtain processed products cheaper than if the large company ran the processing unit itself. When this happens, markets are foreclosed or producers are forced to integrate forward into the marketing sector through cooperatives, to retain their market access.

Therefore, concentration at the first-buyer level has major implications for farmers' access to markets and for determination of market prices.

Large buyers' procurement methods often involve contractual arrangements with farmers and pre-arranged pricing procedures. Because the buyer's procurement costs can be reduced by reducing the number of producers to a minimum, the handlers who buy through contracts prefer to deal with large producers and are reluctant to contract with smaller farmers. This has effectively foreclosed small producers' access to the market in some commodities (such as broilers and processing vegetables) in which contracts are the predominant arrangement between farmers and first handlers. This has been one factor in the demise of smaller producers of these commodities.

For several major commodities, the growth of such contracting and administered pricing has reduced the quantity of those commodities traded in open, competitive exchanges. As one result, publicly available price information is based on a very small percentage of the commodity being marketed, a situation referred to as a "thin" market.

Thin markets increase the opportunity for price manipulation that lowers prices paid to the producers. They also tend to make prices more volatile for those farmers not covered by contracts. Thin markets at the first-handler level, by increasing the likelihood of incorrect price signals being transmitted back to the farm level, also can result in misallocation of farm resources.<sup>9</sup>

Some examples of the forces at work and their effects can be seen in specific commodities.

In markets for processing fruits and vegetables, where 90 percent or more of the processor purchases are contracted, large processors are reluctant to contract with small growers because of the high costs of providing services in the fields. Green-pea processors, for example, typically harvest peas for their contract growers. Harvest scheduling and the efficiency of the huge combines used are significantly impaired when acreage units are small.

In some cases, cooperative purchasing of processing facilities has been necessary to maintain producers' access to markets for processed fruits and vegetables because of conglomerates cutting off processing divisions. These cooperative purchases place additional financial burdens on smaller growers who have to put up the capital.<sup>10</sup>

In poultry markets, the discovery of significant economies of size in both selling and processing, as a result of technological developments, led to high concentration at the first-handler level. This in turn created incentives for backward integration into production by processors of broilers and turkeys, and forward integration into processing and production by feed suppliers, to insure full-capacity operation and meet buyers' specifications. Today, a handful of contractors control most of the poultry production and small- or moderate-sized growers have no independent access to the market.

In grains and oilseeds, the local country elevators remain the dominant first handlers. In general, smaller farmers have little disadvantage compared to their larger competitors in acquiring access to country elevators. However, large farmers have been able to obtain premium prices unavailable to smaller farmers. In addition, very large grain producers can, in some cases, more economically transport grain over long distances to terminal elevators and processors—to, in effect, capture the country elevator's share of the price at the next stage for themselves.

#### Food Manufacturing and Distribution

Changes in levels of concentration in the food-manufacturing and -distribution industries have paralleled those that have occurred at the farm and first-handler levels.

---

---

*"The family farm has changed from an institution whose principal relationships were internalized to one whose principal relationships are externalized. . . . The family farm has been both victim and victimizer in the expansion of intersectoral relationships. . . .*

*"The farmer is . . . the enterpriser who brings together the necessary resources to produce farm commodities."*

**James L. Gulley, Beliefs and Values in American Farming, USDA, 1974.**

---

---

For example, the 50 largest food manufacturers controlled 74 percent of all food-manufacturing assets in 1978, compared to 36 percent in 1950. Similarly, the 50 largest grocery-retailing firms accounted for 27 percent of all national sales in 1940 and 44 percent by 1977.

The most obvious manifestation of increased concentration in these sectors of the food system is the dominance of national—in some instances, multinational—food processors and supermarket chains. In addition, several major food-processing firms are now divisions of conglomerate manufacturing corporations.

The decrease in firms has been identified almost entirely with the demise of small, local enterprises. The reasons for their demise are many, but they include technological developments that shifted the competitive relationships among types and sizes of firms, increased urbanization of the Nation, and the growth of mass markets along with mass communications.

Large multi-product firms that are national or regional in scope have taken an increasing share of the market. Their growth, and the simultaneous disappearance of local firms, have had a major influence on agricultural production. National processing and distribution firms, for example, are not dependent on any one production area for farm-produced raw materials. They obtain supplies according to where they can get the volume, quality, and prices needed to support nationwide marketing programs. As a result of that influence on production patterns, producers for localized markets and their suppliers and marketing outlets may be placed at a competitive disadvantage.



Furthermore, these major firms have been innovators in developing new techniques for tailoring the activities of the production sector to their requirements, with obvious effects both on independent, locally oriented firms and on farmers. A major factor in the decline of independent feed manufacturers, for example, has been the development of integrated, precisely controlled systems for producing and marketing livestock, in which manufacturing the feed for the animals has become an integral part of the firm itself.

### Integration and Coordination

In any productive process with more than one stage, some mechanism must be devised to coordinate the activities of the several stages. This is as true for the food system as it is for the manufacturing and distribution of automobiles.

Market requirements must be evaluated. Inputs meeting particular specifications must be acquired and assembled at the right place and time and in the right quantity for each stage of the production process. Then the final product must be distributed to geographically scattered markets in an orderly manner.

Many different arrangements are used in the food system. Some that have entailed changes in traditional relationships between farmers and the processing-distribution complex have become the subjects of critical public scrutiny.

The major methods in use for coordinating production with the other stages are: open markets, contracts, and vertical integration, which is ownership control of more than one stage moving up and down the chain between production and consumption. The principles underlying these methods apply regardless of the type of legal business entity—proprietorship, corporation, or cooperative.

Agricultural commodities that are produced to a significant extent under contractual arrangements or vertical integration possess, in general, a number of characteristics that distinguish them from commodities traded in open markets at the farm level.

In general, the formally coordinated or industrialized commodities are characterized by a more intensive use of both land and capital. They tend to be the more perishable products and products where there is thought to be some potential for establishing brands and a consumer perception of differences among brands.

For certain commodities, technological innovations in either production or processing have provided the impetus for shifting from open markets to contracts or vertical integration. In some cases, large food retailers or fast-food firms want to be sure that the raw food products they sell or use have consistent size and quality characteristics. To assure control of those qualities, they contract backwards or directly buy into the farm production process so they can specify how the product will be produced.

The extent of formal coordination between production and processing in the food system (both contracts and vertical integration) ranges among commodities from sugar beets and sugar cane, in which virtually all the new supply each year is coordinated, to feedgrains and hay and forage crops, in which less than one percent is coordinated. Milk, broilers, turkeys, and fruits and vegetables also are highly coordinated through formal arrangements. In recent years, a growing proportion of grain-fed cattle and hogs have been produced under contract to meatpackers.

As a national total, about 25 percent of U.S. agricultural production is controlled by formal vertical arrangements (contracting and direct ownership of production).

Commodities that depend primarily on open markets include wheat, feedgrains, and soybeans. These continue to be produced by traditional, independent family-farm operations for the most part.

Vertical integration (production under contract and/or ownership of several stages of the process) is highly related to the size of farms as measured by sales. In 1974, for example, while about 10 percent of all farms reported using contracts, nearly 40 percent of the farms selling \$500,000 or more sold all or part of their production under contract. Only 5 percent of the farms in the \$10,000-to-\$20,000 category reported selling commodities under contract.<sup>11</sup> Yet the products produced under contract tend to be the highest-value products and could offer small- and moderate-sized farmers the greatest opportunity for improving their incomes.

### Integration, Coordination, and Structure

Highly formalized techniques for achieving vertical coordination might not be the primary factor causing increased farm sizes and, in fact, might be the result of increased farm sizes. Nevertheless, the techniques play a significant role in the changing structure of agriculture.

Risk and uncertainty have been cited by some researchers as factors that limit the size of farms.

To the extent that contracts, for example, are an effective means of reducing some of the risks inherent in farming, they increase the comparative advantages of larger farms.

The economics of contracting also favor larger farms. Consequently, a cycle develops in which the growth of large farms leads to contract production, which promotes further growth of those farms.

If and when formalized vertical coordination becomes the predominant means of marketing a given commodity, traditional open markets for that commodity might die out. Producers without contracts or other direct market ties might find themselves with no outlet for their production. Large producers are more readily able to obtain contracts, so the brunt of the decline of traditional open markets falls on smaller farmers.

Consequently, any further growth in contracting and other vertical arrangements has major implications for the survival of smaller farms unless, through cooperatives or other means, they can capture the same access to markets that the larger farms have.

There are, however, some benefits to be gained from these types of coordination, even though their growth has hurt market access for certain classes of farmers and contributed to the growth of thin markets at the farm level. These benefits relate to risk management, scheduling, control of quality, and technical (within a unit) efficiencies of production.

The processor or marketer of perishable agricultural commodities faces a number of risks with respect to raw-product supplies, including uncertainties over their availability, price, and quality. Formal coordination with the production of them provides the processing-marketing sector with a means of managing those risks.

To the buyer of farm commodities, there are three important aspects of raw-product availability: the total volume of production of a commodity; the rate at which the commodity is delivered to the buyer, and the uniformity required by food-processing firms at the next stage.

Contracting allows the marketing firms to develop longer-range programs and, consequently, promotes orderly marketing. Processors and marketers must schedule their labor, transportation, and other elements in advance to assure efficient operations. Close ties to farmers allow them to schedule the receipt of raw commodities of consistent quality more precisely than would be possible if they relied on open-market purchases of raw commodities.

Market access, especially for highly perishable commodities and commodities that have limited outlets, is a major concern of producers. Simply producing such commodities with the hope of finding a market at the end of the production period is highly speculative. Farms with such commodities to sell are vulnerable with respect to obtaining a reasonable

price, *if* they can find a buyer at all. They are in a much stronger bargaining position to deal with prospective buyers prior to making production decisions. Consequently, producers of perishable and specialty commodities have a strong incentive to sell prior to committing their resources, and a high proportion of such commodities are produced under contract.

Price variability for storable commodities is the major factor leading producers into contractual arrangements. Most contracts for commodities of this type are agreements to deliver a fixed volume sometime in the future, at a set price. These contracts are initiated by the producer as a means of pricing his or her product at a known acceptable level, reducing exposure to price risks.

### The Process of Structural Change

Recent research on the structural changes that have occurred in the broiler, fed-cattle, and processing-vegetable segments of the food system suggests that, in these three commodities, structural change began outside agriculture with the imposition of new or changed factors.<sup>12</sup> While this finding cannot be generally applied from the existing evidence to all commodities, it is applicable to those commodities which take a relatively small amount of land but a large capital investment.

The factors causing change include one or more of such things as new mechanical, biological or organizational technology, shifting market forces (such as demand), and new Government policies and programs.

The structural change which followed these changes in outside forces was a process of adjustment—initially to exploit or accommodate new conditions but later to better manage newly emerged risks.

The analysis of these commodities suggests that this kind of structural change occurs in four identifiable stages:

- Innovators in a commodity subsector (including suppliers, processors, and distributors, as well as farmers) adopt new technology.
- Production of the commodity shifts to new geographic areas and to new producers more amenable to the changed methods and practices.
- Production of the commodity rises rapidly, using the newly gained efficiencies.
- New institutions emerge, and new buying and selling arrangements within the subsector change to better manage new risks.

The innovative early adopters of new technology are often new to farming or to the particular commodity, attracted by the potential for profits afforded by changes in technological, market, and policy environments.



The main structural effects at this first stage are growing capital requirements for production, increasing output per unit of labor and land, the emergence of economies of size not attainable under traditional methods, and increasing values for land and other resources in areas most favorable to the new methods. New organizational forms for allocating resources and coordinating activities are introduced in this stage.

In the second stage, the innovators become established in the most favorable production areas, shifting the competitive balance among regions in favor of those areas and concentrating production geographically there.

In the third stage, the new production and organizational technologies become entrenched as the standard operating models for the subsector. Increased specialization and concentration of production in the new areas is accompanied by a decline in the commodity's traditional growing areas. Output per farm in the new areas increases rapidly. In all stages of the commodity's movement through the food system, market economies develop in the new areas. New information systems develop. Total production grows rapidly, possibly causing periods of overproduction. The level and nature of risks faced by participants in all stages of the subsector change.

In the fourth stage, new strategies and institutions for averting risk are developed. The degree of vertical coordination increases, with a heavy reliance on forward contracting. Control over the flow and characteristics of products shifts from farm producers to processors and marketers. The degree of industrialization throughout the subsector rises.

Initially, the commodities studied were characterized by large numbers of smaller-scale farmers who produced broilers, fed cattle, or processing vegetables as sidelines to other types of farming. They sold their products freely in local markets, assuming a high degree of price risk but enjoying relative ease of entry and exit.

Within 20 years, most production of these commodities had shifted to a relatively small number of large, highly specialized, and highly capitalized operations, using the latest technology and concentrated in a few regions of the country. These farms are closely integrated with input suppliers and processors, who often share with producers both control over production decisions and the risks. Products are now sold into closed markets with little access for outsiders. Both entry of farmers into production of the commodity and exit from it are difficult.

The analysis concluded that a key requirement for modern agriculture is stability and predictability. If public policies and programs do not provide this stability, the private sector

will.<sup>13</sup> However, if recent developments are a prologue to the future, the private arrangements that evolve may not be equitable for all groups of producers and will likely reinforce trends toward further concentration in the production sector.

### Marketing-Sector Conclusions

The central issue, then, is whether the desired stability and predictability required for efficiency in our modern food system will be achieved by whatever arrangements evolve from the workings of private markets or whether there will be some degree of public intervention to deal with the structural and distributive impacts of those arrangements.

The public-policy question is, how to assure the most equitable distribution of the benefits of technological change among farmers, other stages of the food system, and consumers?

The food system has increasingly shifted from a commodity-production orientation to a consumer product-merchandising orientation. Evidence for this can be readily found in the growth of mass-merchandising techniques and the proliferation of various fabricated and ready-prepared food products.

These adjustments have been particularly bewildering at the farm level because this change in orientation has required reversals in the priorities of the roles of the production and product-marketing sectors. Evidence of some of the tensions this has generated can be found in the comments of several who spoke at the public meetings that were a part of this project, who said, "Just let us do what we do best: produce."

The agricultural production sector, once the direct supplier of many consumer food products, is now the source of raw materials for a food system dominated by processing, distribution, and marketing.

This concept of agricultural production as a source of raw materials diverges from the traditional concept of agriculture as the food producer and the processing and distribution stages as mere vehicles for delivering farm products to the final consumer.

The difference between the two ways of viewing the relationship between production and processing might be subtle. However, it bears directly on the question of who controls or will control agriculture. It is one basis of much of the current concern about the future of the independent family farm.

Under the traditional concept, the basic decisions concerning the kinds and volumes of food products to be produced were made in the production sector, independent, in large part, of the other stages in the system.



When the production stage is viewed as a raw-material supplier to the processing sector, many of the key decisions about what is produced and how it is produced get made in the forward stages of the food processing and distribution system. The economies and logistics of this process tend to favor dealing with fewer, larger producers or production contractors.

Producer cooperatives could serve an important role in overcoming market-access problems and diseconomies of buying and selling food by small- and moderate-sized producers and part-time farmers. But, to some extent, cooperatives have followed other trends in the farm sector that concentrate production in the operations of the large commercial producers. To be effective in countering present trends, the promoters and regulators of cooperatives will need to take deliberate initiatives to refocus the thrust of the cooperative movement back toward helping those disadvantaged by developments in farm-product marketing.

### **Implications of the Changed Profile**

When the existing farm policies were instituted, and as they have been fine-tuned, the problem they were to solve was seen as an excess of resources devoted to food production.

A stream of technological advances kept production capacity growing faster than the requirements of the domestic and foreign markets of the times. The result was low commodity prices and low farm incomes—low in relation to the incomes of the nonfarm population. Public programs intended to aid farm families were then instituted.

The problem proved to be chronic. Resources were slow to adjust, and the technological advancements permitted continued growth in production, even with fewer and fewer farmers. But, since society benefitted from those technological advancements, it supported continuing public expenditures for farm programs.

Over the years, labor resources migrated from agriculture at a varying pace and, at the same time, the domestic and foreign markets grew, gradually bringing the production potential and market requirements into closer accord. Sometime in the early 1970's perhaps, most of the excess capacity was absorbed, and a much more evenly balanced supply-and-demand situation was finally reached for the first time in more than 60 years.

---

---

*"Support for the family farm as the appropriate unit for agricultural production and its accompanying lifestyle in the community is challenged by larger farm units with greater economies of scale and efficiency in production of food and fiber. . . . The difficulty in such a debate is the determination of what is a family farm. Is a family farm to be classified by a size in acres, annual income, style of management, a combination of management and labor supply within the family unit or some yet-to-be-established criteria? Across the Nation do we have a common definition, or a definition modified by the nature of the enterprise? Is a 25-acre truck farm of vegetables a family farm, as is a 3,000-acre dryland wheat farm in the Great Plains States?"*

**Letter to Secretary Bergland from Osgood T. Magnuson, regional planning director, Division of Ministry & Mission, Lutheran Council in the USA, Minneapolis, Minn.**

---

---

As we enter the 1980's, the long period of adjustment to excess capacity and disequilibrium in U.S. agriculture appears to finally be behind us. The implications of that alone are significant enough for the policies, programs, and institutions that attended that period. But the factor which is in large part responsible for bringing the disequilibrium to an end—the growth in global demand for U.S. agricultural products—promises to continue to significantly impact the market environment in the decade ahead.

Demand fluctuations for U.S. products tripled in the 1970's over those of a relatively tranquil post-war period; this variability could be even greater during the 1980's. This potential instability in agricultural commodity markets promises to be a serious concern in the future.

The problems confronting agriculture today and in the future are likely to be of a nature much changed from those which so long prevailed. Moreover, the future economic climate for agriculture may be far different from that to which we have grown accustomed.

Thus, the vintage rationale for farm policy, the justification given in most of the rhetoric for regulation of the industry and expenditure of tax dollars, is no longer strictly valid.

*But this is not to say that there is no longer any rationale for public programs in agriculture. Rather, the justification for programs and the approach we use to treat the current major problems will need to be quite different.*

Based on the profile above, a number of important changes in agriculture can be summarized.

The farms that comprise the sector today have widely diverse characteristics. The economic well-being of these groups, especially the smaller farms, has in recent years become more closely tied to the nonfarm than to the farm economy. For the smaller sales categories, income from nonfarm sources surpasses by several times the income from farming. This advent of significant nonfarm earnings has markedly reduced the disparity of incomes among farm people. And, in relation to the incomes of people in the non-farm economy, the incomes of the residential and the primary farms compare favorably. The incomes of the small-farm group, although not widely divergent, would compare less favorably.

Within the farm groups are significant differences in income and well-being. Among the rural farm-residences group, off-farm income is high, averaging around \$16,678, and reliance on farm income is less significant. In the next group, the small-farm group, there is evidence of poverty. This group as a whole averages over \$10,000 in off-farm income to supplement farm income, but not all in this group do so well. This does not mean that every one of these people are poor, either, but it may mean that the 300,000 or so farm people who do suffer from significant poverty probably fall within this category. And it is also in this size category that the combination of farm and off-farm income is most critical to an adequate median income. With the removal of either one, there would be considerably more incidence of poverty.

The relatively few blacks, Hispanics and other minorities remaining as farm operators are probably clustered in the rural farm-resident and small-farm groups and are disproportionately represented in the poverty groups. While large numbers of minorities were once farm laborers, sharecroppers and tenant farmers, few attained owner/operator status as farming shifted from being labor-intensive to capital-intensive. Minorities were heavily represented in the millions of workers displaced by capital and thus bore much of the brunt of adjustment as agriculture was industrialized.

Among the primary farmers there are also significant differences. It has been speculated that the fulltime farmers who are having the most difficulty surviving as farmers fall within the \$40,000-to-\$100,000 sales group. These are men and women who have farms that are, for the most part, large enough to realize most of the efficiencies associated with size, who have little off-farm income, and who, in some cases, do not have sufficient volume for an adequate income.

However, having noted these income problems within the categories, it must be concluded that average total family income for all farm-size categories compares favorably with

incomes earned elsewhere in the economy. An examination of average total current annual income per farm for the sector as a whole concluded that incomes of farm people are no longer low by any reasonable standard. Low income and poverty seem associated with particular circumstances and geographic regions and are not pervasive across the entire farm sector, as was the case when many of our programs were instituted.

Failing to recognize the fundamental changes in agriculture will obscure identification of the real problems that now exist and thus impede the development of appropriate future policy and program approaches. Most of the basic program mechanisms that are in use were originally developed for treatment of the low-income problem. Even though they have been adapted over time and, for the most part, no longer directly support commodity prices, they still contain some of the original characteristics. They provide benefits based on the volume of production, implicitly skewing the distribution of benefits to the large-volume producers. Finally, these mechanisms implicitly treat the farm sector as a homogeneous monolith through use of national averages for setting program parameters (loan rates, target prices, cost of production), a decision that might inherently favor groups with costs of production below the national average.

These instruments will require further modification in the future if they are to prove effective (or cost-efficient for taxpayers) in treating current and emerging problems.

The inherent instability in agriculture significantly increased in the 1970's with the advent of rapid growth in foreign markets. This instability, ultimately reflected in farm earnings, most severely affects those farms most reliant on farm income, who also depend most heavily on debt financing—the primary and, to a lesser extent, the small farms. Least affected are the residential farms.

The financial structure of farms is much different today, owing to the proportionally larger use of purchased production inputs and that still-growing use of debt capital. This has greatly increased the annual cash requirements of most farms, because they now have larger and more numerous annual fixed financial obligations. This pattern varies across farm sizes, becoming greater for farms of larger sizes, and is most pronounced for the primary farms, where the debt-to-asset and cash expenses-to-production-receipts ratios are much larger than for the smaller ones.

So the vast improvement in the rates of total return to farm investment does not mean the primary-farm group of operators has no problems. The changed financial structure of these farms would suggest they are much more vulnerable because of the increased variability of incomes and returns. This is especially true for the most financially leveraged



farmers, those with little equity who use debt capital to acquire assets—generally the newer farmers.

That would suggest the need for price-stabilizing programs, not only for these farms, but for the benefit of the overall system and to protect the nonfarm economy from disruptive impacts arising out of the agricultural economy. Also, there is a need for a closer look at the possible structural impacts of instability and the ability of the food system as a whole to withstand shocks from abroad and domestically.

The delineation of the major categories of farmers reinforces the important points to keep in mind when addressing policy and structural concerns:

- The needs of farm businesses and farm people associated with the groups are different.
- They respond differently to economic conditions and public programs, generating different consequences for structure and other policy objectives.
- Subdividing the primary farms by type of principal commodity produced reveals the surprisingly small number of farms that account for the vast proportion of production of each commodity.

Finally, the profile and the research used in developing it confirm some important hypotheses that have been offered in recent years about the efficiency of the farming system and point to some needed changes in focus for programs and for research agendas of the future.

Recent studies reaffirm, for example, earlier findings that the longrun average cost curve for farms decreases rapidly as farm size increases, up to a point, and then becomes relatively flat over a wide range in size. It thus appears that most of the primary farms have reached or surpassed the size needed to attain most economies related to size. The major portion of our food and fiber is thus produced by firms that are beyond the most technically efficient size.

Economies-of-size studies suggest that few public benefits accrue from farms of sizes beyond those necessary to achieve the available cost economies. The success of the farm sector in providing consumers with food at an ever-decreasing proportion of their disposable income was largely possible through greater efficiency—achieved in the main by farm consolidation, the growth in size needed to capture the existing technical economies. Results from these studies indicate that, for the primary farms as a group, technical economies (and, one could conjecture, the pecuniary economies as well) have largely been realized with existing technology and price relationships. There would thus appear to be no further significant gains to be had by consumers from further consolidation and size growth within this group of farms. This, of course, calls into question further subsidization by taxpayers if it is justified by the expectation that further food price-reducing efficiencies would result.

---

*"We Americans are a romantic lot. While the pedestal we place various professions on is a little shaky of late, we still idealize certain folks. . . . In no other area have Americans romanticized an occupation more than with the farmer and the rancher—particularly the family farmer.*

*"For many it is almost un-American to find the farmer . . . having goals, ambitions and needs like his counterpart in urban and suburban areas. For nearly two-thirds of our population, those born since World War II, their only knowledge of the farmer is from their parents, a trip in the country, or what they read and see in books and on TV or at the movies. It is for the most part a distorted picture . . . , but one they believe is the real Americana and to be stored and retrieved when a tie to the 'wonderful' past is called for. . . . It is fulfillment of the American dream to move upward to better and more rewarding occupations and higher income. Yet let the farmer add acreage, a larger tractor, more stock, or a bigger barn, that not only improves the farmer's lot but gives the consumers wider choice, better quality and lower-priced food, and we begin to look for a bogeyman. . . .*

*"We should never forget that our way of life as farmers and ranchers—whether on 10 acres or 10,000 acres—is only possible as long as we meet our customers' needs. Our claim for our way of life is **not** superior to any other profession or occupation, and hope alone will not save us. . . .*

*"In summary, I do not believe government should set policy based on some stereotype, or, worse yet, the average family farm. No two people have the same idea of what constitutes the family farm today, and no idea of what the family farm will look like in the future. More importantly, any programs aimed at such a 'will o' the wisp' definition is destined to mean more government regulation and intervention."*

**Hubbard Russell, Jr., chairman, National Cattleman's Association committee on private lands and water usage, at the Denver meeting.**

---

The economies of size might be as they are in part because of the past focus of public research on such things as large-scale equipment and technology based on inexpensive energy and inexpensive capital. If more research could be focused on making efficient complements of machinery for smaller farms and on energy-efficient practices, thus changing the cost curves, perhaps this would permit a more pluralistic farm sector in terms of size mixes and less concentration of production into one or two size categories.



## Footnotes

1. The procedures used in the 1974 Census of Agriculture did not completely count all farms. Primarily, the census tended to miss small farms. To account for any discrepancies, a census survey on the completeness of the enumeration was made along with the actual census. Some time after the census data are released, adjustment percentages are made available to account for differences between the reported numbers and what are believed to be the "actual" numbers. USDA then uses the adjustment percentages to recalculate the census numbers for such publications as "Farm Income Statistics" and the "Balance Sheet of Agriculture," but not for all USDA publications.
2. The generalizations in this and subsequent sections are conditioned by a rather fundamental limitation in the data. The census statistics assume a single operator per farm. There is no information on the frequency or the distribution of multiple-person operations across farm sizes. Recent observations suggest, however, that the larger operations tend much more to be two- or three-person operations and that one or more of these individuals often is in the younger age categories. To the extent that multiple operators occur, one may well overestimate the difference in well-being of operators on such units in relation to smaller, single-operator farms. Likewise, there are no data on the off-farm earnings of second or third partner in such operations.
3. Intriguingly enough, off-farm income accounted for 40.7 percent of the farm population's income in 1934 but did not again reach that level until 1959, staying above it since and above 50 percent for 11 of the last 13 years.
4. Crecink, John C., *Families with Farm Income: Their Income, Income Distribution and Income Sources*, Economic Development Division, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, November 1979.
5. Lin, William, James Johnson, and Linda Calvin, "Farm Commodity Programs: Who Participates and Who Gets the Benefits," Economics and Statistics Service, U.S. Department of Agriculture (forthcoming).
6. Objections are always certain to arise when discussing rates of return to agriculture that include increases in asset values (capital gains). The objections, essentially, are that the capital gains are unrealized, that they are illiquid wealth, that the increase cannot be captured without selling the asset. In the case of land, this is an unreasonable act for one wishing to continue in farming. But the gains can become the equivalent of money when the increased equity in the assets is used to obtain credit for farm expansion.  
The inappropriateness of adding the rate of return from current income with the rate of return from nominal capital gains has been pointed out by Emanuel Melichar and others. However, they have also overcome this objection by calculating the *real* return from asset appreciation (capital gains) which is comparable with net income. Real capital gains (the increase in wealth after adjusting for inflation) represent the amount of increase in the wealth of the farm business that could be taken out without reducing the real wealth position, the viability of the business. Therefore, real increases in asset values are no less a return to farming than current income is. For further discussion of this subject, see Melichar's "Capital Gains Versus Current Income in the Farming Sector," paper presented at the American Agricultural Economics Association annual meeting, Washington State University, August 1, 1979.

7. For additional analyses of the effect of equity on cash flow for several typical farming situations, see *Status of the Family Farm*, Third Annual Report to The Congress, U.S. Department of Agriculture (forthcoming).
8. See Thomas A. Miller, "Economies of Size, Structural Change, and the Impact of a Family Farm Policy," paper presented at the Western Agricultural Economics Association annual meeting, Las Cruces, N.M., July 21-22, 1980.
9. Edward V. Jesse, "Thin Markets for Agricultural Products: Causes, Effects, and Public Policy Options," National Economics Division, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, staff paper, September 1980.
10. Allen B. Paul, Robert W. Bohall, and Gerald E. Plato, "Farmers' Access to Markets," National Economics Division, Economics, Statistics, and Cooperative Service, U.S. Department of Agriculture, staff paper, September 1980.
11. *Status of the Family Farm*, Second Annual Report to the Congress, Economics, Statistics, and Cooperatives Service, AER No. 434, September 1979.
12. Donn A. Reimund, J. Rod Martin, and Charles V. Moore, *Structural Change in Agriculture: The Experience for Broilers, Fed Cattle, and Processing Vegetables*, Economics and Statistics Service, U.S. Department of Agriculture. Forthcoming.
13. LeVeen, Phillip, "Comments on a paper by Reimund, Moore, and Martin on 'Structural Change in Broilers, Cattle Feeding and Processing Vegetables,'" contracted correspondence to the Structure of Agriculture Project, Office of the Secretary, U.S. Department of Agriculture, October 1980.

## Selected References

- Lin, William, George Coffman and J. B. Penn. *U.S. Farm Numbers, Sizes and Related Structural Dimensions: Projections to Year 2000*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Technical Bulletin 1625. July 1980.
- Lin, William, James Johnson and Linda Calvin. "Farm Commodity Programs: Who Participates and Who Benefits." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- McDonald, Thomas and George Coffman. *Fewer, Larger U.S. Farms by Year 2000—and Some Consequences*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agriculture Information Bulletin 439. October 1980.
- Miller, Thomas A., Gordon E. Rodewald and Robert McElroy. "Economies of Size in Major Field Crop Farming Regions of the United States." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

- Moore, Charles V. "Acreage Limitation: Interim Report." Special Report to the United States Department of the Interior, Water and Resources Service, Washington, D.C. March 1980.
- Penn, J. B. "The American Farm Sector and Future Public Policy: An Economic Perspective." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Reimund, Donn A., J. Rod Martin and Charles V. Moore. *Structural Changes in Agriculture: The Experience for Broilers, Fed Cattle, and Processing Vegetables*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Schertz, Lyle P. "Inflation: A Food and Agriculture Perspective." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Schertz, Lyle P. and others. *Another Revolution in U.S. Farming*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 441. December 1979.
- Status of the Family Farm*. First Annual Report to the Congress. Committee Print. Committee on Agriculture, Nutrition and Forestry, United States Senate, Washington, D.C. 1979.
- Status of the Family Farm*. Second Annual Report to the Congress. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 434. September 1979.
- Status of the Family Farm*. Third Annual Report to the Congress. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Structure Issues of American Agriculture*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 438. November 1979.





## **PART II AREAS OF POLICY CONCERN**

**Landownership**

**Soil and Water  
Conservation**

**Tax Policy**

**Commodity Policy**

**Credit Policy**

**Public Research and  
Extension Policy**

**Agricultural Labor**

**Trade Policy**







Landownership has been a deep-seated personal goal in the American culture since the beginnings of this country as a collection of European colonies. The attachment to widespread private ownership of property, of which landownership has been a prominent aspect, has been of primary importance in shaping the economic, social, and political structure of the United States from that point on.

Even when they could not always attain their goal, having a chance to own the land they worked and to realize the income from it has always been a value fundamental to understanding the beliefs and actions of American farmers.

### **The Public Interest in Land**

The intensity of the public's interest in farmland ownership has fluctuated over time. Transferring to private ownership about half the land ceded to the Federal Government by the new States after the Revolution was a major public objective until the late nineteenth century—as a way to settle the territories and protect borders, to raise money, to promote education, and to develop transportation.

But even with relatively inexpensive land available on the frontier, tenancy persisted. One-fourth of the farmers in 1880, for example, were tenants. Subsequently, this proportion increased, with tenant farms accounting for 70 percent of the jump of 2.8 million in the total number of farms between 1900 and 1935. As a percentage of the total, tenant farmers reached a peak of 42 percent in 1930, a time of severe and widespread economic deprivation that began in agricultural areas.

This high level of tenancy was among the most prominent of the problems upon which policymakers, business and agricultural leaders focused during the thirties.

The number of full tenants declined by 1.5 million between 1935 and the end of World War II, and the total would drop by another 1.14 million by 1974, when only 261,836 were reported by the Census of Agriculture. The disappearance of these tenant farms accounted for 58 percent of the 4.5-million-unit decline in the total number of farms between 1935 and 1974.

During the same period, farmers who owned part and rented the rest of what they worked became the most prominent category of farm operators. While their numbers have declined slightly over the postwar period, these part-owners, who accounted for 16 percent of all farm operators in 1950, comprised 26 percent of the total in 1974.

As important as that growth in part-ownership is the fact that their operations accounted for 53 percent of American farmland. This means that, for more than half the farmland in use, the functions of ownership and operation are not held entirely in the same hands. Many farmers who owned

land found it a convenient strategy to rent additional land, both to capture the potential of new technology and machinery and to reduce the capital requirements for that growth. The trend to part-ownership farming has slowed in recent years because rapid inflation in land prices has made investment in ownership of additional land by those already owning some land a more attractive financial strategy. Annual increases in land values have been greater than current earnings from farming and that appreciation is taxed eventually at a lower rate, if it gets taxed at all.

As a policy issue, tenancy is not much discussed today—perhaps because full-tenant operations now account for only about 11 percent of our farms. Moreover, being a tenant farmer in many instances no longer implies either poverty or reduced social status. The focus of ownership issues has shifted toward the transfer from one generation to the next, corporate ownership, and, to some extent, foreign ownership of U.S. farmland. One reason for the prominence of these concerns has been a sustained increase in land prices for more than a decade.

However, for reasons which will become apparent in the chapters which follow, the potential for continued increased concentration in landownership could well mean reduced access to landownership by those wishing to farm. Some owning land will do so more for the investment returns and will look to others to farm it, however. Thus there is considerable potential for increased separation of landownership and farming—hence increased tenancy. This could well become an increasingly sensitive public policy issue.

### **Structural Issues**

Attempting to address those concerns, the Structure of Agriculture Project focused on three pivotal questions:

- What is the distribution of ownership of farmland among Americans today?
- What are the trends and the prospects for future ownership patterns?
- Is owning the land still as important to farm operators today as it traditionally has been, and, if so, do Federal policies foster the achievement of that goal or detract from it?

Our analysis of landownership trends—based on recent surveys, research into particular aspects of the issue, and the testimony of those who spoke at the public meetings—led us to these summary answers:

- Ownership of farmland in the United States is relatively concentrated (Table 26). Farmland comprises more than half of the land. In 1978, less than 3 percent of the total population owned all of the farmland. About 0.14 of one percent of the total U.S. population—or five percent of the farmland owners—owned 48 percent of those farm and ranch acres.



- Forces promoting concentration have intensified in recent years. If present conditions continue, landownership will become more concentrated, with increased separation between the ownership and the use of the land—that is, an increase in absentee ownership and a corollary increase in tenant farming.

- Ownership by farm operators of the land they work remains a cherished goal in our society.

## A Profile of Landowners

Who owns this land now? A survey of landownership in the United States in 1978 and other recent work discovered these facts about the owners and the distribution of this vital asset (Tables 26-28):

- Including individuals, partnerships, and corporations, there were slightly more than 6.9 million owners of the 938 million acres of farms and ranches.

- Another 26.8 million owners account for the other 409 million acres of privately held land in the United States.

- One percent, or 337,000, of the owners of private land, including farmland, own nearly *one half* of that land, or 648 million acres—an average of 1,923 acres each. Seventy-five percent of the owners hold 3 percent of the private land; conversely, 25 percent own 97 percent.

- Governments—Federal, State, and local—own less than 1 billion acres, or about 40 percent of the 2.3 billion acres of land in the United States, excluding Alaska. Of that 1 billion, the Federal Government owns about 85 percent.

- About 88.1 percent of the 6.9 million owners of farm and ranch land are either sole proprietors or husband-wife co-owners. Another 7.4 percent are family partnerships or family corporations. Together, these categories comprise 95.5 percent of the owners but hold only 90.3 percent of the acreage. The other 9.7 percent is owned by nonfamily partnerships and corporations, 4.5 percent of the owners.

- One percent of the farmland owners possess 30.3 percent of the farmland. The percent of farmland owned by the largest one percent varies among regions—from 8.4 percent in the Lake States and Corn Belt to over 37 percent in the Mountain States. In 1946, before Alaska and Hawaii were States, a survey found that one percent of the farmland owners controlled 28 percent of the acreage.

- Less than 3 percent of the farmland changes hands each year, and 72 percent of the buyers are farmers.

- Most of the farmland owners are white males between the ages of 50 and 69, although this finding does not fully recognize husband-wife holdings and family partnerships.

## Who Can Buy Farmland?

Research has shown that, as long as we expect significant inflation in the economy, returns to ownership of farmland will continue to be split between current net returns to land and capital appreciation of the land. During the 1970's, appreciation in land values was by far the greater part of those returns.

The last decade showed that farmland ownership has been a good investment when both these streams of returns are considered. It has consistently outperformed all other potential individual investments except real-estate trusts since the late 1960's. But what are the impacts on investors of having very favorable total returns split between current income and capital gains? The future ownership of land resources is crucially dependent on who can invest in farmland.

At least three types of investors have potential importance in farmland ownership issues:

- Farm owner-operators who are primarily dependent on farm receipts to sustain their operations;

- Individual absentee-owners and farm owner-operators who have significant wealth and income sources independent of agriculture, and,

- Tax-exempt institutional investors, such as pension funds, churches, or charitable foundations.

The differences among these classes of investors stem primarily from their dependence on current income from agriculture, their tax liability or exemption status, and their abilities to use debt financing to leverage their ownership of capital assets. An analysis of the ability of these investors to bid for specific parcels of land and the rates of return they would experience led to the following conclusions:

- Tax status and effective tax rates are of great importance to the ability of investors to bid for farmland.

- Ability to use debt financing to leverage control of capital assets is especially important in times when high rates of inflation are expected to continue.

- Beginners and other investors who depend primarily on farm sources for current income are at a competitive disadvantage in buying land.

The interpretation of those conclusions for each of the classes of potential investors in farmland is:

- Established owner-operator farms are in a very strong competitive position compared to both potential new owner-operators and other investors. The established owner-operators can obtain a *de facto* tax-exempt status, deferring taxes on current income by continued growth and expansion of a farm they expect to pass intact to a succeeding generation. How this works is explained further in the tax-policy chapter which follows.

- Entering owner-operators may have net returns similar to established owner-operators but cannot handle the negative cash flows that result from low current returns and high levels of debt financing. In a sense, land has come to have the characteristics of a "growth stock"; it is a good, long-term investment but the current earnings will not pay for it. This means that would-be beginning farms cannot borrow money to buy land and repay that loan with farm earnings, especially in the early years of the loan.

**Table 26: Distribution of landownership and age of landowners (farmland), 1978**

Region	Proportion held by		Age				
	Largest 5 percent	Largest 1 percent	Under 35	35-49	50-64	65-74	75 and over
	(Percent of acreage)						
Northeast	34.2	13.8	7.8	29.1	38.4	16.3	8.4
Lake States	24.2	8.4	9.6	31.3	36.0	15.2	7.9
Corn Belt	24.6	7.9	6.2	25.1	37.4	18.5	12.8
Northern Plains	32.7	14.9	6.4	24.0	39.9	19.5	10.2
Appalachian	39.1	17.0	6.5	24.1	37.5	20.5	11.4
Southeast	49.2	27.1	4.3	22.1	42.1	20.4	11.1
Delta	45.8	23.0	5.2	25.1	37.2	22.2	10.3
Southern Plains	53.6	33.4	4.7	20.1	39.6	21.3	14.3
Mountain	67.2	37.6	5.0	26.5	43.6	17.9	7.0
Pacific	71.0	43.0	4.3	23.1	42.4	18.2	12.0
United States	48.1	30.3	5.9	24.6	39.8	19.1	10.6

Source: ESS/USDA.

**Table 27: Distribution of farmland owners and acreage owned, 1978**

Region	Owners with less than 50 acres		Owners with more than 1,000 acres	
	Percent of Owners	Percent of Land	Percent of Owners	Percent of Land
Northeast	66.4	14.9	.2	20.7
North Central	43.5	6.8	.3	23.5
South	69.3	14.3	.4	26.3
Great Plains	35.0	1.8	3.3	23.3
Southwest	77.6	6.3	4.7	67.5
Northwest	72.7	6.3	5.9	60.9

Source: ESS/USDA

**Table 28: Distribution of farmland owners and value of land owned, 1978**

Region	Owners with farmland valued less than \$50,000		Owners with farmland valued more than \$1 million	
	Percent of Owners	Percent of Value of land	Percent of Owners	Percent of Value of land
Northeast	69.0	11.2	.4	40.8
North Central	40.0	5.4	1.2	13.7
South	79.3	20.0	.4	21.3
Great Plains	49.4	6.1	1.1	28.9
Southwest	62.2	7.9	2.1	44.1
Northwest	64.5	7.0	3.4	55.6

Source: ESS/USDA

- Individual absentee owners, who are not dependent on current returns from farming, can obtain a similar *de facto* tax-exempt status through continued land purchases and debt financing. Thus, they are in a very strong competitive position to acquire and hold farmland for the purpose of accumulating an estate.

- Tax-exempt institutional investors, such as pension funds, charitable foundations, and churches, enjoy a tax-exempt status but, in general, cannot employ debt financing to increase their control of assets in inflationary times. Thus, they are in a stronger competitive position than a beginning owner-operator but in a slightly less competitive position against an established owner-operator or an individual non-farm investor with independent sources of income.

Smaller and beginning farmers are at a clear disadvantage in buying land against both the pension funds and larger, well-established farmers.

However, it is important to note that, to be fully competitive with the tax-exempt institutions, even the well-established farmer must aggressively expand, using debt financing. But this sort of expansion is not without problems for the individual and, at times, for the public as a whole, if emergency relief measures become necessary. The lower-equity farmer who must depend on current earnings to meet his financial obligations, including interest and repayment of debt, is at a distinct disadvantage in a rising land market. His cash flow may be insufficient to meet obligations. The pension funds, on the other hand, have no cash-flow problems. With 100 percent equity financing, they face little risk, but they force farmers into taking a very risky course in order to compete with them.

A large-scale infusion of capital into farmland from either pension funds or other kinds of institutional investors would also have other impacts.

First, the farmland market is very thin. Only a small number of transactions, compared to the total amount of land, occur in any given year. In the year that ended February 1, 1980, only \$17 billion worth of farm real estate changed owners. That amounted to 26.5 million acres out of a farmland base of about 1.04 billion acres, valued at \$668 billion. In the last six years, the market has gotten thinner. In 1974, there were about 140,000 transfers compared to the 86,000 last year—a decline of about 40 percent.

Further, last year about 2.5 percent of the farmland was transferred, but much less than that made it to the open market. Historically, nearly half (43 percent) of the farm acreage is purchased from a relative, inherited, or received as a gift. The other 57 percent of the land is transferred through nonfamily sales, but a substantial proportion of these sales are to friends and neighbors—prearranged sales of parcels that are not publicly advertised.

It is unknown exactly how much land is available for sale to the outside investor or to young farmers who do not happen to be connected, but it is likely to be less than one half of the total land transfers, or less than \$8.5 billion worth in 1980 values. In 1978, private pension funds alone, had assets worth \$564 billion, around 10 percent more than the total value of farm real estate in contiguous states that year. That is, it would have required only 1.5 percent of their total assets to buy up all the land that was available nationally on the open market.

The second major impact is on the price of farmland. There is no national exchange for buying and selling farmland, and forces at the local level, including these who have recently bought or want to buy, exert a major influence on the actual transaction price. The entry of even a small fund or other institutional investor could dramatically increase the asking prices in a local area.

### **Inflation, Land, and the Distribution of Wealth**

Very likely, the *greatest* single force propelling changes in the current structure of landownership in agriculture is not the nonfarming investor, the industrial corporation, the large agribusiness firms exerting their market power, or even established farmers trying to expand. Instead, the greatest force is probably inflation.

The concentration of ownership of farmland corresponds to the concentration of wealth in farming—which is not surprising, considering the role that land plays in determining that wealth and the fact that land values surged during the 1970's.

In current dollars, physical assets of farm operations (land and buildings, machinery, livestock, and crops stored on and off farms) more than tripled in value between 1960 and 1978, with the major increases occurring after 1972's boom in grain prices. This increase in farm-related wealth of farm asset-holders more than kept pace with inflation. Consequently, the real wealth of the sector as a whole increased substantially, and farm wealth as a proportion of total national wealth increased from 7.7 percent in 1970 to 8.7 percent in 1978.

But the capital gains accrued by farm asset-holders were not shared in a manner proportionate to the holdings of assets at any one particular time. Aggressive individuals who acquired farm physical assets during this period gained more than others. Thus, inflation contributed to the increases in wealth among farm asset-holders and also to the increase in concentration of that wealth among those who were aggressive in acquiring such assets as land.



As noted, one of the most important trends affecting agricultural structure has been soaring farmland prices since World War II. Until the early 1970's, land values appreciated at a compound average rate of 5.6 percent per year. This appreciation reflected a combination of increased farm earnings and relatively low rates of inflation. The price increases of the 1970's were greater as earnings increased and inflation accelerated.

The previous section observed generally that, as an investment, land, both urban land and farmland, compared favorably during the last decade with other kinds of investments available to individuals. Comparing annual yields from various investments shows that, since 1970, the annual *earnings* of farmland ownership (the ratio of net rent to land value) have usually been lower than earnings from all other types of investments except common stock. In the 1960's, earnings to landownership were more competitive with other investments. *Capital gains*, on the other hand, have been much higher from farmland than from other investments. In the year that ended March 1, 1980, farmland capital gains exceeded 15 percent.

The magnitude of increases in farm wealth (capital gains) may be better understood when that wealth is related to farm earnings over time. In the seven-year period of 1972 to 1978, the value of U.S. farm assets more than doubled. This increase of more than \$400 billion was nearly three times the total farm earnings in the same period and equivalent to total farm income for the previous 38 years.

Slightly over half of the \$583 billion in capital gains accruing to physical farm assets between 1960 and 1978 can be attributed to increases in the general price level (inflation). The balance represented the increase in the real wealth of those owning the assets.

There can be little doubt that, if the attractiveness of farmland as an investment holds its own, farmers who already have large holdings will continue to aggressively acquire more land. Landownership probably will become more concentrated in the future as a consequence.

These patterns develop because land is a good investment hedge against inflation. But, more importantly, it is a good tax shelter. With high interest rates induced by that inflation, the distance between "current" earnings on farmland and the amount needed to carry the financing is widened. The rate of current earnings might even be decreased by the same inflation that raises interest rates. The growing gap between interest and returns to land is most easily filled by those who are rich. Under our tax laws, they are especially favored when it comes to trying to span this distance.

---

---

*"One of the great issues facing agriculture today is the gathering sentiment that land really belongs to the people, and that the farmer has only a stewardship right in the asset. It is a kind of socialist mentality, and it has an adverse effect on the farmer. It leads to the belief by politicians and consumers alike that the farmer has a responsibility to provide cheap food, that the economy can't afford escalation in food costs commensurate with increases in production costs. It is essential that the consumer understand that . . . he simply will spend more of his take-home pay in the food-basket."*

**J. Howard Settle of Baltimore, Md., in Fayetteville.**

---

---

Inflation thus both compounds the attractiveness of farmland as an investment and strengthens the competitive position of the wealthy in buying land.

### **Ownership and Government Policy**

The competitive advantage held by those who are expanding their land base is augmented by Government programs through which the general public absorbs price and production risks, offers subsidized credit, and provides tax advantages to those with enough income to take them.

The assumption of risks by the public makes those who would otherwise have to shoulder those risks themselves more confident about their economic future and their ability to repay debt. It enhances their bankers' confidence as well, because the chances of these people going bankrupt are lessened by that assumption of risk.

Tax rules, which are examined in detail in Chapter 6 of this part of the report, reinforce the effect of inflation in strengthening the competitive position of the wealthy in buying land.

The permissive accounting rules used in reporting income from the farm investment frequently produce losses that are accounting losses, not economic losses. These tax losses shelter other income, either farm or nonfarm, from the income tax. The capital gains produced by farm activities are not taxed as they accrue. The gains, therefore, are almost always taxed much later than the time when the expenses associated with the original purchase or development of the capital asset are claimed as deductions. Most frequently, the gains are taxed, if they are taxed at all, as long-term capital gains. High-income taxpayers are in a position to exploit these rules the most.

Sometimes these tax shelters are discussed as if they benefitted only individuals "outside of farming." The tax provisions are, however, used regularly by larger farmers to lower their taxable incomes. For example, a lawyer may utilize a farm operation to generate \$50,000 of accounting losses to reduce, for tax purposes, his \$75,000 income from practicing law. A farmer may use a similar set of farm resources to generate \$50,000 of accounting losses to place against \$75,000 in income from other farm operations.

Those not-always-taxed capital gains and increased wealth are not shared equally by asset holders. Different people respond differently to inflation. Those who are aggressive and acquire additional physical assets during inflationary periods gain more than those who do not. Inflation also contributes to the wealth of those who have leveraged themselves the farthest. Tax, credit, and risk-sharing programs have supported this action.

In many cases, these aggressive purchasers have reduced their own flexibility—their ability to withstand reductions in farm prices or increases in interest rates. They would be most susceptible to bankruptcy if Government did not bear some or all of the price and production risks.

Increased land values also make it more difficult to pass a moderate-sized farm intact to one's children. The greater the value of the farms, the more difficult these transfers from one generation to the next become.

## Summary

Three summary points about landownership are important:

- There will probably be continued rapid inflation in land prices because of strong global demand for food and the consequent pressures on the land base; the related rise in earnings to farm production; continued inflation in the general economy, which increases the attractiveness of investing in land as a shelter; continued availability of liberal credit arrangements from private and especially public farm real-estate lenders, and incentives for landownership provided by tax policies and risk-reducing farm commodity programs.

- That will reinforce present trends toward concentration in landownership—mostly into the hands of large farms growing larger but also in those of some wealthy nonfarm investors.

- Those trends imply a gradual disenfranchisement, a separation, of the majority of the people from the land.

Those conclusions produce an irony of sorts. The long-held belief that widespread ownership of land by those who farm it will produce a more responsible citizenry includes the belief that those who farm it should have few restraints on how they use it or on their ambitions to acquire more land. (That is, no publicly imposed limits on growth of individual farm businesses). In fact, "growth" has become a measure of business "success" in our society. Market forces, and the incentives outlined in this and other chapters by which public policies have reinforced them, will continue to move agriculture toward a situation in which a few will own the land.

Those speaking for land interests will be fewer and fewer and thus may increasingly not speak for the interests of those who would like to own land or to secure access to land to farm.

In effect, present trends in landownership and use could move agriculture in the same direction as the rest of the economy and society: from a nation of many small businesses and private owners to a nation of a few large firms and many wage-earners.

## Selected References

- Bills, Nelson L. and Arthur Daugherty. *Who Owns the Land? A Preliminary Report for the Northeast States*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED 80-8. 1980.
- Boxley, Robert F. *Landownership Issues in Rural America*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. ERS-655. 1979.
- DeBraal, J. Peter. *Foreign Ownership of U.S. Agricultural Land*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Information Bulletin 440. 1980.
- Gertel, Karl and James A. Lewis. "Returns from Absentee-Owned Farmland and Common Stock, 1940-79." *Agricultural Finance Review*. Vol. 40 1980.
- Gustafson, Gregory C. *Who Owns the Land? A Preliminary Report for the Western States*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED 80-12. 1980.
- Lewis, Douglas G. *Who Owns the Land? A Preliminary Report for the Southern States*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED 80-10. 1980.
- Lewis, James A. *Landownership in the United States 1978*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Information Bulletin 435. 1980.

- Lewis, James A. *White and Minority Small Farm Operators in the South*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 353. 1976.
- Moyer, D. David. *Who Owns the Land? A Preliminary Report for the North Central States*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED 80-11. 1980.
- Schertz, Lyle and others. *Another Revolution in U.S. Farming?* Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economic Report 441. 1979.
- Sechler, Susan. Statement before Select Committee on Small Business, United States Senate, 96th Congress, 2nd Session, Washington, D.C. October 8, 1980.
- Thompson, Allen R. and Michael Green. *The Status of Minority Farms in the United States 1974*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED 80-14. 1980.
- United States Department of Agriculture. *Monitoring Foreign Ownership of U.S. Real Estate: A Report to the Congress*. Economics and Statistics Service, Washington, D.C. 1980.
- Wunderlich, Gene. *Facts About U.S. Landownership*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Information Bulletin 422. 1979.
- Wunderlich, Gene. *Foreign Investment in Southern Real Estate: Methods and Trends*. Conference Series No. 9, Georgia World Congress Institute, Atlanta. 1980.



## CHAPTER 5 SOIL AND WATER CONSERVATION



Perhaps no single aspect of our agricultural system has been so taken for granted as the abundance of our natural resources—our water, fossil fuels, and productive soil. But, as the capacity of our production system is being pushed ever closer to its outer bounds, the physical limits of our natural resource base are coming to be much more fully recognized and appreciated.

As we look across this decade and beyond, increased demands on our food-production plant are indicated. Resource problems that exist now might become even more severe, and additional problems might emerge. All, in combination, could significantly affect our future food-production ability.

The Government and the public it serves must begin to give greater attention to conservation of the Nation's natural resources; we must give greater thought to their most beneficial use to society as a whole, not just for the present, but for future generations.

Confronted with growing demands for food and fiber in the future, an understanding of the extent and nature of the margin between current production capacity and the full potential of our resource capacity assumes a growing importance. The two sources of greater quantities of food production—higher productivity and our natural resource base—will in the future become more and more inextricably linked. The policies we subsequently pursue must not only take account of immediate productive capacity needs, but they must also give more explicit attention to maintaining and expanding the capacity over the longrun and doing so in a broader social context, regardless of how the resources are organized and held. Resource conservation and environmental policies may either constrain or enhance increased food production. Most are constraining *in the shortrun*, but there are trade-offs between operating at maximum production in the short-run with environmental degradation and sustained longrun capacity with environmental enhancement.

The conservation and use of our land and water resources—explicitly addressing such areas as reduction of soil erosion and sedimentation, preservation of prime agricultural lands, retention of agricultural wetlands, enhancement of instream water flows, water conservation in irrigated agriculture, and competition for agricultural land and water resources from energy production—must be crafted as an integral part of food and agricultural policies for the future.

### The Land Resource

The 1.5 billion acres of U.S. land not owned by the Federal Government are now categorized as follows:

- 413 million acres available for use as cropland, 387 million of which were used for crop production in 1980.
- 542 million acres used to graze livestock, including 134 million acres of cropland and native pasture and 408 million acres of range.
- 370 million acres primarily in forests.
- 176 million acres in primarily nonagricultural uses—small towns, urban areas, highways, and airports.

In addition to the 413 million acres of land classed as available for crop production, 127 million more acres of the pasture, range and forest land are considered to have potential for use as cropland.<sup>1</sup> Thirty-six million of these acres are considered to have high potential for conversion to cropland use with little investment. Another 91 million acres have medium potential but would require some developmental costs and conservation investments to remain in crop use.

### Soil Erosion

On large parts of the agricultural land base, a severe management problem is the depletion of the soil resource through erosion. The most dominant form of that erosion is caused by water runoff, estimated in 1977 to amount to 4.044 billion tons, the equivalent of 2,247,000 acre-feet of soil. (An acre-foot is a 1-foot-deep slice of soil large enough to cover 1 acre.) A second source of erosion is wind, responsible in 1977 for the movement of 1.462 billion tons (812,000 acre-feet). Losses from gully erosion were 298.3 million tons, or 165,700 acre-feet.

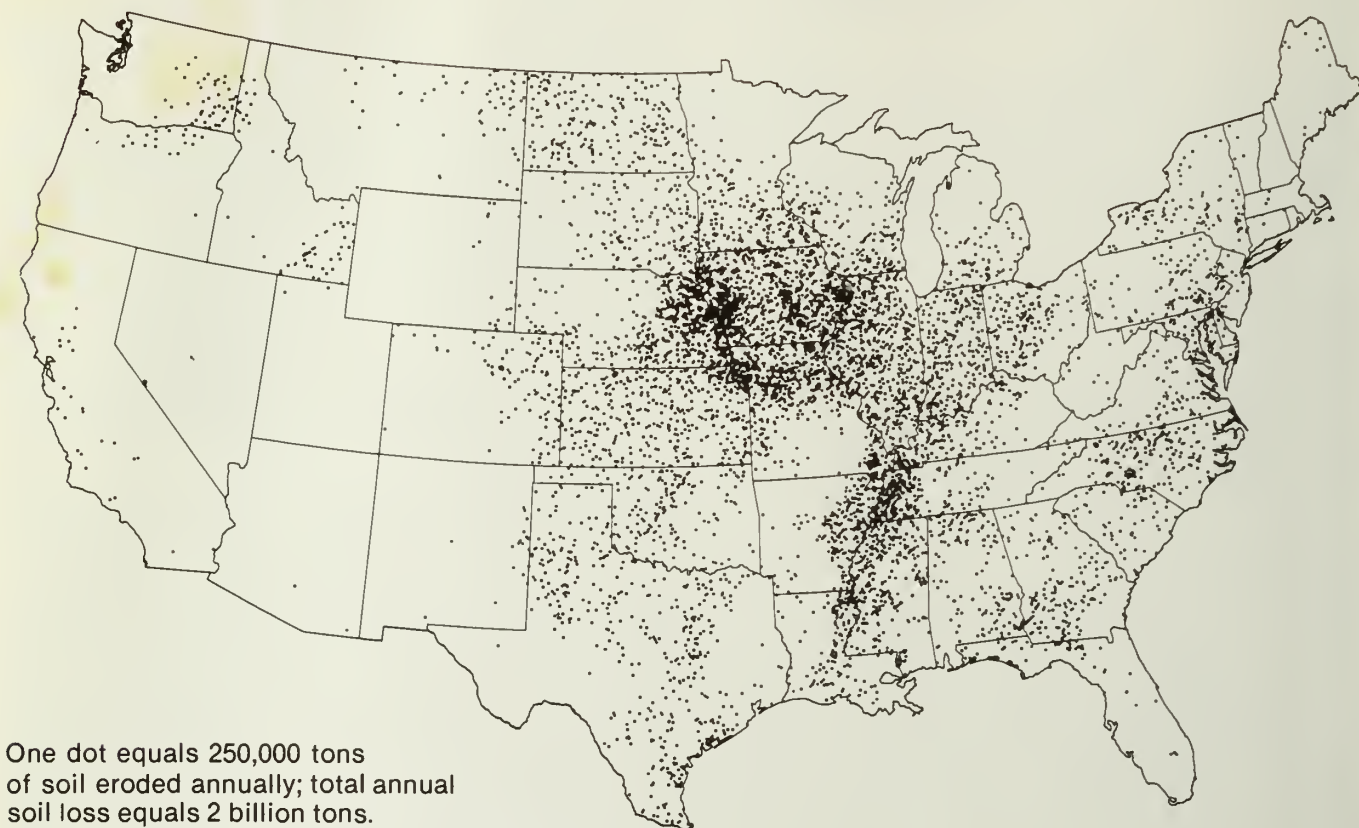
Water and wind erosion redistribute soil, depositing it on other tracts, on floodplains, and in streams. Some soils are enhanced by this deposition, and most soils have some natural regenerative capacity, perhaps as much as 2 to 5 tons per acre annually. When erosion exceeds this, the depth of the most productive topsoil is being reduced, diminishing over time the crop-yielding capacity of the land and causing other detrimental effects, such as stream sedimentation and pollution when nutrients and toxic chemicals are carried with the sediment.

While severe in the aggregate, erosion does not occur uniformly across land types. More than one-half of all erosion occurs on cropland, one-third is on rangeland, and smaller proportions occur on the forest and pasture land. On most agricultural land, erosion occurs at relatively low rates: less than 5 tons per acre annually is lost on two-thirds of the land. On cropland, the loss exceeds 10 tons per acre on only 17 percent of the acreage. The most serious cropland erosion is thus concentrated on a relatively small land area (Figure 7).



Figure 7

## Total Cropland Erosion, 1977



One dot equals 250,000 tons of soil eroded annually; total annual soil loss equals 2 billion tons. Most serious sheet and rill erosion occurs in the Corn Belt and Delta states and west Tennessee.

Almost 95 percent of the erosion on cropland occurs where cultivated and close-grown crops are produced; the average annual loss is 8 tons (5.4 tons sheet and rill and 2.6 tons wind). Because of the protective influence of growing vegetation and crop residues, erosion on cropland not in cultivation, is, of course, much lower.

Crops differ in the average annual erosion associated with them according to the region and the type of soil on which they are grown. Water and wind erosion rates for the five principal crops are: cotton, 19.9 tons; sorghum, 12.6 tons; soybeans, 8.2 tons; corn, 7.6 tons; and wheat/fallow, 6.5 tons.

That briefly sketches the problem at present. But the problem is not static—what about the future, when the pressures for increased domestic and foreign production will become even stronger and undoubtedly increase the economic incentives to extend cultivation to additional lands?

Prior to 1970, when the agricultural plant was operating well below capacity and significant acreages were idled by Government programs, larger and larger production was obtained on successively smaller acreages of land. Crop production had become concentrated on the best land—the highest yielding, lowest-production-cost acres, and the acres least prone to erosion.<sup>2</sup> But, with the rapid growth in export demand, farmers have in the last 10 years reversed the trend of the previous 4 decades, and expanded the land used for crop production by 54 million acres.



The inherent erosion potential is much greater on the cropland not now in cultivation. Estimates of the average erosion per acre annually on the land now cropped (5.4 tons per acre) are greatly exceeded by the estimated average erosion rate that would occur (about 10 tons per acre) on the potential additional cropland acres under the same conditions. As crop production extends onto a greater land base, the potential erosion problems can be expected to become more and more severe, with greater associated environmental problems.

While soil erosion is a major problem, it is by no means the only important problem affecting our land resource and our ability to produce food and fiber now and in the future.

### **The Wetlands**

This Nation has 166 million acres of swamps, marshes, and floodplains unsuitable for cropping that are classified as wetlands. Additionally, another 104 million acres also classified as wetlands could be cropped, at least intermittently, with drainage to increase the crop yields. These wetlands are now recognized as having important roles in the ecological balance. Reflecting this, Federal policy no longer subsidizes their drainage for crop production unless an overriding conservation or pollution-abatement goal is to be realized. In fact, Federal and State programs now attempt to maintain the wetlands; more than 19 million acres are being preserved for wildlife habitats through either long-term leases or direct purchases of the land.

Growing incentives for greater commodity production will, in the future, heighten pressures to drain the wet soils for cropping. Maintaining the wetlands in their current state, of course, implies an increased use of marginal croplands, at higher production costs per unit of output, and greater problems of erosion and sedimentation.

### **Preservation of Prime Lands**

Another important factor affecting our present and future food-production capacity is the conversion of prime agricultural land to nonagricultural uses, which also aggravates the soil-erosion problem to the extent that production must shift to the potentially less stable lands. When inventoried in 1977, the Nation had 344.5 million acres of prime agricultural lands. The cropland base of 413 million acres included 230 million acres of prime lands; prime lands not included consisted of pasture, range, and forests not presently cropped. The rate of conversion of current and potential cropland to urban or other nonagricultural uses was estimated in 1975 to be 900,000 acres per year, 675,000 acres of which came from the current cropland base. Perhaps two-thirds of the land converted was prime land or land that has suitable physical and climatic characteristics for farming.

Public policy presently discourages the irreversible conversion of prime lands. Forty-eight States now have some type of policy to protect agricultural lands, by such means as preferential property-tax assessments, agricultural districting, easements or contracts, zoning, and development rights. At the Federal level, the Department of Agriculture advocates the retention of prime lands.

The relatively small proportion of the cropland base being converted may not affect the geographic distribution of the production of major crops or the structure of American agriculture in the aggregate. But, the State and local effects are very important, particularly in areas where nonfarm influences may seriously affect the viability of farming.

### **Water Resources**

Agriculture is the predominant user of water in the United States, accounting for almost one-half of all fresh-water withdrawals from surface and ground sources and over four-fifths of the actual consumption. Almost 98 percent of the water consumed in agriculture is used to irrigate crops; the remainder, for livestock.

The total productivity of agriculture is importantly enhanced by irrigation. The acreage irrigated has steadily increased over time—from 7.17 million acres in 1900 to 14.6 million acres by 1930, 20.7 million acres by 1945, 30 million acres by 1955, 45.3 million acres by 1975, and, by 1978, 51.3 million acres were under one form of irrigation or another (Figure 2). Over 20 percent of the irrigated acreage received water from the Federal water and power resources services projects, 29 percent received water from non-Federal projects, and 50 percent received all water from on-farm sources.

The growth in irrigated acreage has been possible only with substantial capital investment—over \$16.9 billion in 1975, of which \$9.0 billion was Federal investment and the remainder non-Federal public and private investment. The implied average investment per irrigated acre was \$270 in project facilities, \$105 in on-farm facilities, and \$375 over all.

Irrigated acreage has historically been concentrated in 17 western States but with rapid growth has shifted eastward in recent years. Acres irrigated east of the Great Plains increased by 65 percent between 1974 and 1978, in contrast to only 14 percent in the western States. Supplemental irrigation in the rain-fed farming areas will become increasingly important.

## Groundwater Depletion

The estimated volume of groundwater supplies of the United States exceeds that of all surface supplies, including the Great Lakes. The volume, equivalent to about 35 years of surface runoff, is 97 percent of total freshwater supplies. Despite these impressive supplies, withdrawals of groundwater occur at rates exceeding the natural recharge in many important agricultural areas. Withdrawals have been estimated at 68 to 85 million acre-feet annually; the extent to which these figures reflect groundwater depletion is uncertain. In some areas, however, declining water levels in combination with the rising cost of energy necessary to lift the water are causing irrigation wells to be abandoned.

One of the most critical depletion areas is the High Plains of west Texas and eastern New Mexico. Continued irrigation on several million acres is at risk in this region because of the increasing inadequacy of available groundwater supplies. The aquifers from which the water is pumped are contained in the Ogallala Formation, one extremely slow to recharge.<sup>3</sup>

Because local surface-water supplies as alternative sources are often inadequate, few options for the Ogallala problem are available except to slow the rate of groundwater mining. As things now stand, farmers have economic incentives to continue pumping for shortrun production needs. Yet, an acre-foot of water pumped from Ogallala aquifers is often, literally, "mined," not to be replaced for generations.

An irony of past policies is that irrigation development in the Ogallala area was certainly encouraged, if not subsidized, by Federal programs at the same time the Nation was trying to cope with chronic agricultural production surpluses. Now that the surpluses are gone, much of the water is, too.

In the absence of practical alternative sources of water supply, irrigated lands now dependent on groundwater overdraft will continue to revert to dryland production. Production and farm income will be reduced in areas where irrigation is abandoned. Ultimately, this could increase the economic pressures for individual farms to grow if income from dryland farming is to equal that realized from irrigation. At the national level, the production losses due to the abandoning of irrigation will have to be made up elsewhere if output is to be maintained. This also could aggravate the soil erosion problem as fragile lands in humid regions are brought into production.

## Water Conservation

President Carter in 1978 established water conservation as a national priority and directed it be made a major component of national water policy. This meant that water conservation (actions to reduce the demand for water, improve efficiency in its use to reduce losses, and improve land-management practices) should be fully integrated into water-resource development plans for achieving national economic development and environmental-quality objectives.

The potential for increasing the productive capacity through improved irrigation efficiency may be much less than generally perceived. In the shortrun, the potential is extremely limited. By the year 2000, water withdrawals from surface and underground sources could be reduced an estimated 39 million feet under a greatly accelerated water conservation program. However, not all of this additional water is available for immediate consumptive use; as much as four-fifths of the reduced withdrawals would have returned to streams and underground aquifers for subsequent consumptive use.

Continually rising energy prices may have significant impacts on production and water use. Higher energy prices increase the cost of water to the farmer and will result in less being used, unless commodity prices rise as well. Farmers respond to higher energy costs by lowering water application rates, changing to crops requiring less water, or by abandoning irrigation. This is already occurring in the Texas High Plains and other areas of deep-pumping lifts and falling water tables.

## Surface-Water Shortages

In almost every region of the West, more water could be used for irrigation if it were available. Competition for existing surface water supplies is intense. Energy development and municipal and industrial uses are bidding away water previously used either for agriculture or recreation or to maintain fish and wildlife habitats. Although competition for water from municipal and industrial water supplies continues to increase, the greatest potential conflict may be between energy development and irrigation. Both uses require large amounts of water. Periodic droughts aggravate the situation.

## Competition for Resources for Energy

An increasing share of our Nation's energy in the coming decades is expected to come from coal and synthetic fuels. Mining coal and processing it into energy for electricity-generation plants (liquefaction, gasification, *et cetera*) require land and water resources. Since the values of land and water in energy production will likely exceed their values in agriculture production, energy producers might be able to outbid agriculture for these resources.



Overall, the impact on the Nation's agricultural productive capacity from the loss of these resources to energy development will be slight, although local economic impacts could be severe. About 570,000 acres of rural land will be used temporarily for strip-mine coal production. The impact of oil-shale development on agricultural-resource productivity will be imperceptible at the national level.

### Water Quality

The improvement of water quality relates to water conservation and the use of water in a context broader than just agriculture. The major efforts at improving water quality are focused on pollution control. Nonpoint pollution-control efforts are directed at controlling erosion and runoff from agricultural and forested areas and at the use of pesticides. Point-source controls primarily affect livestock feedlots and food-processing plants.

New and modified processes reduce water use and waste loads from food-processing plants. Changes within the plants involve water conservation through new processes, process modification, recycling, and improved cleaning processes. Wastewater treatment and disposal include water renovation by land treatment, irrigation, and wastewater treatment, including lagoons. Over all, water savings can amount to 50 percent or more in many food-processing plants, which is important to the seasonal water demands of small towns and communities.

Improved water use through water-quality practices could change the pattern of land use and cropland utilization. Management practices on farms to improve water quality, such as minimum tillage, taking land out of production for buffer strips, terracing, *et cetera*, will influence yields and production patterns. Productivity may be reduced; production costs may rise.

The regional effects of water-quality improvements have important implications for the structure of agriculture. The impacts on farm size, cropland use, and enterprises would be expected to vary significantly from region to region.

### Future Conservation Policy Directions

The concern for productivity loss and other detrimental effects of erosion have led to substantial Federal and State programs of cost-sharing and technical assistance to encourage landowners to undertake erosion control on their lands. Presently, the Federal Government spends over \$1 billion annually on conservation programs alone; another \$152 million of State, county, and local funds go for the same purpose.

In the broad area of planning, development, management, and use of the Nation's water resources, annual Federal outlays now exceed \$10 billion. In spite of this tremendous outlay of funds, water problems still exist—flood damages

increase each year, water quality deteriorates, instream uses compete more intensely for withdrawals, and water shortages occur with increasing frequency across the country.

As we undertake a forward look at the kind of actions most appropriate to ensure the wise use of our resources, it is useful to review the types and nature of past policies this Nation has pursued.

### Past Policy

The foundations of national policy for the conservation of soil and water resources are contained in the Soil Conservation and Domestic Allotment Act passed in 1935. This act established the Soil Conservation Service, and provided that, in return for furnishing technical and financial assistance on private lands, certain things could be required of the States. Specifically, the States were to enact and enforce laws imposing permanent restrictions on the use of erosive lands. Contributions of either cash or in-kind services to farmers were authorized for activities beneficial to private interests.

The initial thrust of Federal conservation policy had clear regulatory overtones, but the regulatory powers were not to be exercised at the Federal level. Rather, State and local governments were expected to establish and exercise the land-use controls. The theory was that farmers should impose land-use controls upon themselves. Following the lead of a 1935 Texas law, States were asked to pass legislation authorizing soil conservation districts as governmental subdivisions. Districts were to be organized based upon the favorable vote of the "land occupiers" in a proposed district.

The idea of conservation districts caught on; by 1942, 41 States had passed the required enabling legislation. Today, nearly all agricultural land is in a conservation district. The State laws that brought the districts into being, however, made the passage and enforcement of controls on the use of erosive lands difficult. Few, if any, instances are recorded in which the regulatory powers granted to the districts have actually been used to conserve soil for long-term public benefit. Thus, one of the basic intents of national conservation policy, local controls on the use of problem lands, has been lost.

With one exception, the Great Plains Conservation Program, the assistance provided by the Soil Conservation Service is technical. Assistance is based on personal interaction with land users and extends from informing them of the benefits of erosion control and water conservation to the design and engineering of drainage systems and irrigation facilities. The primary impact is to increase awareness of land-management problems, both conservation- and production-oriented.



The act was amended in 1936. In part, the amendments were to replace provisions of the Agricultural Adjustment Act of 1933 struck down by the Supreme Court. They empowered the Secretary to make payments to farmers for a variety of purposes, including soil and water conservation. The resulting program evolved into the Agricultural Conservation Program (ACP).

The ACP was initially intended to be temporary. The States were given two years to enact legislation enabling them to develop and implement plans for preserving and improving soil fertility, promoting the economic use of land, reducing the exploitation of soil, protecting rivers and harbors against the results of soil erosion, and reestablishing the purchasing power of the net income of farmers, relative to nonfarmers, to a level equivalent to that which prevailed from 1909 to 1914. Once the States had acceptable programs for these purposes, the ACP was to make grants to the States for their implementation.

During the time that State plans were being developed, ACP was to be administered through a system of farmer-elected county and community committees. No State submitted an acceptable plan by the end of 1938, and Congress extended the ACP for another two years. Eventually, Congress extended the ACP as a temporary Federal program nine times. Only one State ever submitted a plan, however, and it was not acceptable. Finally, in 1962, Congress repealed the State-plans provision of the original act. A temporary program for 26 years finally became legally permanent. The system of farmer-related committees that had governed the program since 1936 was also given permanent sanction.

Unlike the Soil Conservation Service programs, the ACP is a program of financial assistance. Until recently, the ACP offered financial assistance for much the same things for which the SCS provided technical assistance—conservation as well as production-oriented practices. Although the form of assistance was different, the impact was much the same—to increase the extent to which land- and water-management problems are solved by shifting part of their costs to the public. As with the SCS programs, the recipient was the ultimate decisionmaker as to the specific problem that was to be solved and the practice or measure used to solve it.

From their inception, the conservation programs have had an element of inconsistency, if not contradiction. For example, soil erosion arose as an issue of national prominence out of the very obvious soil-erosion problems and the farm depression in the late twenties. The response was public programs intended to control soil erosion. These programs were accompanied by subsidized land development through drainage, irrigation, and other means. More land, of course, enabled greater production—at a time when already-excess

production held commodity prices and farm incomes low. During the thirties and forties, farmers were still largely reliant on natural fertility and, in attempting to maintain income levels in the face of low prices, continued exploiting the soil resources to maximize their shortrun returns without regard to the longer-term consequences. This, of course, worked counter to the objective of reducing erosion. Thus, actions intended for one major purpose were being simultaneously undermined as those actions aggravated the basic incomes problem in the sector.

There is still a contradictory element today in Federal action in the name of soil and water conservation. Although the ACP program has been reformed to shift the orientation from primarily production-oriented practices, many of the programs still provide assistance for them. These programs offer cafeteria-style technical and financial assistance, with the recipient making the decision as to what will be done. The crisis atmosphere that accompanied the initiation of those programs, exacerbated by the Depression, resulted in little attention being given the benefit/cost relationships involved. Given the production technology and conditions existing at the time, taking the benefits of erosion control as self-evident may well have been appropriate. But the situation is different today, not only in terms of the technology of production but also in terms of the scarcity of public and private resources relative to the alternative uses to which they can be put.

The impact of changes over time in agricultural technology on erosion control relate to fertility depletion and soil deterioration.<sup>4</sup> Agricultural technology was such in the 1930's that erosion control addressed both fertility depletion and soil deterioration. Synthetic fertilizers were not yet commonly used, and production was generally dependent on natural fertility. In large respect, the soil served as a storehouse of natural fertility. Crops that yielded the highest incomes frequently used more natural fertility than they replaced. Consequently, these crops were grown in rotation with "soil building" crops, those that tended to increase the quantity of plant nutrients in the soil. Multiyear crop rotations thus served to alternately deplete and restore soil fertility.

So long as agriculture was dependent on natural fertility, any practice that reduced water runoff tended not only to reduce erosion, but also to maintain the fertility available in the soil. Benefits of these practices were thus derived from both fertility maintenance as well as from preventing the deterioration of the soil resource itself.

The agricultural technology emerging and adopted since the Great Depression has effectively separated fertility depletion from soil deterioration. Use of commercial fertilizers has resulted in a situation in which "soil-building" crop rotations are no longer commonly used. High-income crops still tend to deplete nutrients in the soil, but chemical fertilizers are now substituted for "soil-building" crop rotations as the primary means of providing plant nutrients. Where cropland was historically "farmed-out" and then restored over the course of a multiyear crop rotation, it is now, in a sense, farmed out and "restored" annually. Moreover, the use of chemical nutrients easily absorbed by plants, as well as the ability to optimally time and place their applications, has resulted in crop yields much higher than those achieved when agriculture was dependent on natural fertility.

Just as with the commodity programs, tax provisions, and other Federal programs, the drastic changes in farming that have occurred over time are not reflected in the conservation programs. While the technology of agriculture has changed tremendously since the 1930's, the administration of Federal erosion-control programs is carried out in much the same context as it was during the Great Depression. This is particularly true in terms of benefit/cost relations to the farmer, the landowner, and to society at large.

The performance of these programs has at best been mixed. Emphasis has been placed primarily on getting practices "on the ground." One of the consequences of this approach is that more than half of all ACP-assisted erosion-control practices have tended to be installed on lands that were eroding at relatively low rates.

About one-half of all terraces on cropland are on lands that would not erode over seven tons per acre if the terraces were not present. Over 70 percent of the land on which minimum tillage was used in 1977 would not erode over five tons per acre without the practice. Of the 175 million acres of cropland on which crop-residue use, contour farming, minimum tillage, or contour strip-cropping were used in 1977, 74 percent would not erode at rates over 5 tons per acre annually without the practice.

So long as fragile lands are cultivated, it might not be feasible to control erosion on them at a level that even approaches the conventional standard of five tons per acre. The effectiveness of minimum tillage might have to be significantly increased to make it a feasible control practice on fragile lands. Terraces can also be used to reduce erosion on fragile lands. However, erosion rates may still exceed 5 tons per acre on terraced land with slopes greater than 5 percent. This, of course, suggests limits to its feasibility as a means of effective control on fragile lands. Over the near term, available technology appears to be such that we cannot expect to cultivate fragile lands and hold erosion to acceptable levels except at very high and perhaps prohibitive costs.

The benefits of soil conservation are difficult to quantify. For example, some research has examined the relationship between soil erosion and crop yields under current conditions. Results cannot be generalized—the yield effects of erosion vary greatly from one situation to the next. When yield declines are due to fertility depletion they are reversible simply through the use of fertilizers. In general, however, it is not known what the productive capacity of soil is in terms of relating rates of erosion to changes in soil properties that are thought to be relevant to its productivity. Scientists, however, do agree that soil erosion reduces soil productivity, although it is not known whether the rate of productivity decline is linear or curvilinear and accelerating. There is a point beyond which current technology cannot fully offset the soil productivity loss from erosion.

### New Policy Directions

Past conservation policies and programs have not been closely coordinated with those relating to production. Our conservation programs have limited this concern to agriculture's relationship to the land. In so doing, they have avoided becoming directly entangled in the complex of prices, ownership, and rural living-condition problems. In addition, technical-assistance programs have not been fully coordinated with financial-assistance programs. The results have been overlap and duplication of administrative structure and other program features. This has undoubtedly led to some program inefficiencies.

Future conservation programs must be effectively integrated toward common rather than separate goals and constituents. Financial assistance should only be given commensurate with benefits that accrue to the general public. Technical assistance should be used to ensure that priority policy objectives are accomplished. Because production and conservation are inextricably linked, production-adjustment and resource-conservation programs should be similarly linked.



What of incentives? Changes in the technology of production since the Great Depression have increased the separation of public and private interests, particularly where soil conservation is concerned. While the income situation of farmers is much improved, financial pressures are enormous. Under these conditions, farmers may not undertake practices that yield little, if any, benefits to them, even if financial and technical assistance reduce the farmer's share of their installation costs to zero. If production activities cause conservation problems, then conservation incentives must compete with the rewards of production. Farmers grow corn because the market demands corn and pays for it, bushel by bushel. If public policy is to effectively conserve resources, then society may have to consider paying for it, ton by ton and acre-foot by acre-foot, or insist on it through enforcement of regulatory standards for tolerable erosion and sedimentation limits.

Specifically, a new focus for resource-conservation policies, appropriate to the kind of economic environment that may prevail in the future, could include:

#### A. Soil Conservation

- The effectiveness of Federal cost-share funds for conservation can be increased by targeting a large proportion of the funds to those areas and farms where erosion is most severe.
- Diversion of land now used for crops to pasture or other extensive uses is needed in the critically high erosion areas. Long-term diversion contracts specifically for soil conservation could be used in areas with chronically high erosion rates. The long-term contracts could specify cropping patterns and resource-management systems. Remuneration could be based on the difference in net returns from cropping and the more socially desirable use.
- Conservation achievement contracts provide annual payments to farmers based on the amount of reduced erosion achieved by using selected conservation and tillage practices. This new conservation incentive offers maximum flexibility to farmers to use conservation practices that are most suitable to their particular farming situation. A pilot program could be initiated to assess the operational feasibility of this incentive measure.

#### B. Agricultural Land Retention

- The policies and programs of various Federal agencies have been inconsistent in their effects on the conversion of agricultural land. Federal policy should be made consistent.
- Current and past agricultural land-retention policies have tended to focus almost entirely on land rather than the quality of that land for producing agricultural products. Federal policy should more specifically address the factors affecting the viability of *farming* in settings where agriculture is or should be preserved.

#### C. Water Resources

- Water conservation is an important complement to water development, as a means to avoid water shortages. Low water prices, some of which are the result of Federal programs, tend to discourage water conservation. Policies at both the Federal and State level are needed, either through taxation or direct pricing schemes, to make the price of water to the user more nearly reflect its cost or value in use. Legislation that would allow adjustments in prices of water from Federal irrigation projects would encourage more efficient water use and extend available supplies.

- Groundwater supplies in many parts of the country are being depleted faster than they are being recharged. Measures are needed to mitigate depletion of these groundwater supplies and reduce the potential adverse impacts on farmers and rural communities. Federal and State policies for water management should be coordinated and linked with agricultural policy in a manner to make the most socially effective use of groundwater over time.

#### D. General Resource Policies

- Stronger State and local leadership and roles, consistent with land-use planning and regulatory powers embodied at those levels, are needed. State capability and capacity for addressing soil- and water-conservation problems have been increasing, and State-led initiatives to reduce erosion and sediment are growing. A total of 12 States now have statewide erosion and sediment control laws; in 8 States the laws apply to all or some agricultural activities. Model legislation supported by the Council of State Governments is available.
- If demands for exports and energy feedstocks significantly increase pressure on the Nation's land base, a tax program related to these activities may be appropriate to provide funds for support of soil conservation and agricultural land-retention programs. Such an arrangement would result in those who benefit from the added burden on the Nation's resource base paying the social cost associated with that use.
- Information on the status of the Nation's land and water resource is inadequate. No information on private investments and disinvestments in resources exists. Consequently, rigorous analysis of the potential of the land and water base is not possible. New programs providing for the collection of land and water resource data are needed.



## Footnotes

1. This potential was based on economic conditions prevailing in 1976. The potential will change with future economic conditions. Since 1969, land planted to crops increased 54 million acres, about one-third of which is estimated to have been converted from pasture and timber uses and the rest from the existing cropland or cropland pasture base.
2. Soil loss from erosion is primarily determined by three factors: the inherent potential for erosion in the land itself, in terms of the force of erosive agents, soil characteristics, and topography; the extent of crop canopies and residues reducing the inherent potential, and the influence of conservation practices, such as contour farming and strip-cropping.
3. The Ogallala Formation is a thick deposit of sand that underlies parts of Nebraska, Colorado, Kansas, Oklahoma, New Mexico, and Texas. Although depletion problems appear to be most severe in Texas and New Mexico, they have begun to appear in the other states, particularly in dry years when withdrawals for irrigation are heavy.
4. Fertility depletion is the removal of plant nutrients through cropping, leaching, and other means; soil deterioration, on the other hand, refers to the physical or chemical impairments of the soil which are largely irreversible and which reduce the productive capacity of the soil regardless of the amount of fertilizer or other productive agents applied to it. Simply put, fertility depletion occurs when plant nutrients are withdrawn from the soil faster than they are replaced, while soil deterioration actually reduces the capacity of a soil to serve as a medium of fertility.

## Selected References

- Lee, Linda. *A Perspective on Cropland Availability*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 406. 1978.
- McMartin, Wallace, Virgil Whetzel and Paul R. Myers. "Resources at Risk: Coal Development and Rural America." Economics and Statistics Service, United States Department of Agriculture, Washington D.C. Forthcoming.
- Timmons, John. "Agriculture's Natural Resource Base: Demand and Supply Interactions, Problems, and Remedies." Speech presented at National Conference on Soil Conservation Policies, Washington, D.C. November 1979.
- United States Department of Agriculture, *et. al.* "Interagency Task Force on Instream Flows, Water Policy Implementation." Final Summary Report. Washington, D.C. December 1979.
- United States Department of Agriculture. *Our Land and Water Resources, Current and Prospective Supplies and Uses*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Miscellaneous Publication 1290. May 1974.

United States Department of Agriculture. "Prime and Unique Farmlands." *Federal Register*. Part 657, Vol. 43, No. 21. Soil Conservation Service, Washington, D.C. January 1978.

United States Department of Agriculture. "Resource Conservation Act Appraisal 1980." Economics and Statistics Service, Washington, D.C. Forthcoming.

United States Department of Agriculture, United States Department of the Interior, and Environmental Protection Agency. "Irrigation Water Use and Management." An interagency task force report. Washington, D.C. June 1979.





Taxes are levied to raise revenue for public purposes and as one means to stabilize and/or help direct the economy. The way in which they are levied—fiscal policy—affects the distribution of income and wealth in our society. The form they take also affects the way our society and economy function.

The Structure Project was not concerned with the first of these, the purposes and levels of taxation and their effect on the economy as a whole.

Rather, it focused on the impacts of taxation on the structure of agriculture. That is, for example, have our Federal taxes had any influence on patterns of ownership and control of farm assets? On the distribution of wealth in the agricultural sector? On the way that agricultural components are organized and operated? If so, what influence?

The answers to those questions are closely related to the efficient use and allocation of agricultural resources and to the fair sharing of the bounty that flows from agricultural production. Equitable distribution of the economic values that are tied into agricultural production similarly is related to assuring our society of adequate food supplies at fair and relatively stable prices.

### **Tax Policies Bearing on Agricultural Structure**

Several tax policies can influence investment behavior and thereby have a bearing on agricultural structure. They are strewn throughout our tax laws. Some were developed by the Congress; some, by the Internal Revenue Service. Some have been with us for a long time; others are recent.

The tax policies which impact on agriculture are general in their design. That is, they were not designed to benefit one size or type of farm over another or to influence structure in any pre-determined direction. But, in fact, those individuals or firms with considerable wealth or in high income-tax brackets have the greatest incentive or financial ability to utilize the tax rules to their benefit. Wealth and financial status cannot be directly correlated with the categories of farms around which much of this report is developed. Thus, the benefits and impacts of tax provisions are not precisely delineated by these farm groupings. Nevertheless, it is the distortion in exploitation of tax laws that dictates differential investment and financial-management behavior and ultimately a structure and organization of production different from what would have prevailed in the absence of the tax provisions. Research results to date are consistent on one point: the direction of change caused by tax policies has been toward increased concentration of farm production and wealth and, perhaps, more capital-intensive technology.

### **Cash Accounting/Capital Gains**

In administering the Federal income-tax code, the Internal Revenue Service decided early that farmers could use cash accounting in reporting their incomes while also deducting the costs of developing farmland, crop-producing perennials, and herds of animals—expenses with a later pay-off. Later, the Congress specified that the income from the sale of some of the assets produced by these costs—a new generation of animals or a vineyard, for instance—could be treated as long-term capital gains and taxed at a lower rate than ordinary income would be.

Together those rules frequently allow costs to be separated from the income associated with them. The costs are deducted from ordinary income and can shelter income from that year that would otherwise be taxed at high, progressive rates. The future income associated with those costs is treated as long-term capital gain, and only 40 percent of it is taxed.

Consequently, the tax benefit produced by deducting the development costs is greater than the long-term capital-gains tax levied on the income generated later by the development costs. When this occurs, the returns on investment in farm assets are augmented by returns from the tax system, so the total return on the investment is higher than it would be without these provisions of the tax law.

The results are not always dramatic. Even so, the income-tax rules applied to farming are liberal, and farm income frequently is bolstered by them to some extent. Again, the impacts are not evenly distributed.

### **Preferential Estate-Tax Rules**

Agricultural investments also frequently qualify for preferential estate-tax rules.

One such rule allows the payment of estate taxes over a long period of time. During this period, the unpaid estate taxes (or a part of them) bear interest at only 4 percent. This provision was enacted to give relief to estates having little liquidity, because a substantial part of the estate was tied up in business assets. This longstanding concept was revised and liberalized in 1976.

Another preferential provision allows farmland to be valued for estate tax purposes well below its market value, under certain circumstances.



### Miscellaneous Rules

Several miscellaneous tax rules bear on the structure of agriculture. An entire panoply of rules differentiates between the way corporations are taxed and the way individuals are taxed. Another set of rules was designed to reduce the cost of capital and encourage its flow. Yet another set imposes taxes on wages to serve the broad social purpose of providing retirement benefits through Social Security and temporary unemployment assistance.

### Consequences of Tax Policies

Those tax policies have had some influence on the structure of agriculture. *How much* influence they have had—compared to such other factors as interest rates, crop prices, weather, technological change, and subsidy programs—is uncertain.

Some observers believe that the force of tax policy has been strong. Others think it has largely reinforced the directions in which other factors were propelling agriculture. This dispute, which the project did not attempt to resolve, should be kept in mind when reading the following discussion, which outlines the direction in which tax policy has pushed or pulled; precise estimates of the intensity of its effects are simply not available.

With that qualification, the following conclusions are justified:

- Tax law tends to perpetuate ownership of farm assets, particularly land.
- The separation of ownership from management is a corollary to continuity of ownership. Absentee ownership is encouraged by the tax code to some degree, but the absent owner may frequently participate in some management decisions.
- Tax law seems to encourage capital structures with a higher ratio of debt to assets and greater use of debt capital relative to other resources than would otherwise exist.
- Tax law encourages the growth and expansion of existing farms. Some of this growth comes at the expense of other farms; some, at the cost of denying entry to persons who want to begin farming. Tax law thus has abetted the trend toward fewer and larger farms, but with perhaps more diverse ownership.
- We have imposed taxes on labor while allowing tax breaks for capital investment. We do not know the economic incidence of these taxes and benefits, however. As a consequence, we do not in fact know precisely the economic results caused by these taxes. But it can be said that farmers have either a real or an apparent incentive to consider the substitution of capital for labor.
- Some commodity prices are lower because the tax system has stimulated the development of assets producing those commodities, thus distorting relative prices in the economy.

- Recent changes in tax policy encourage increased use of corporations as a way of organizing agricultural operations.

- Management practices may be chosen because they allow the best use of tax rules. They may not be the best crop and animal management. The overall impact could be less efficient use of resources.

Those conclusions were drawn from previous studies and special research undertaken for this project, the results of which will be published separately. Particular aspects of tax policy as it affects the structure of agriculture need to be highlighted here, however.

### Prices and Ownership of Farmland

*Estate Tax Special-Use Valuation:* In 1976, the taxation of estates was substantially revised. During the shaping of this legislation, farmers argued that estate-tax values for farmland were unfairly being established by market value.

This value frequently did not reflect the apparent income-generating capacity of the lands, but rather depended on the money that could be made from potential future nonfarm as well as farm purposes, simply because land values were rising due to its scarcity. Farm interests argued that farm-operator families could not realize these higher values on which estates were taxed without selling the land or removing it from farming. If the land were to be kept in farming, they said, its fair estate-tax value should be the capitalized value of the annual cash flow, rather than market value.

The Congress accepted this argument despite the fact that most purchases of farmland were by farmers, at market value, for use as farms. It adopted what is called the special-use valuation provision for qualifying farms.

Under this provision, the value of qualifying land may be reduced from its market value to its "use" value under a prescribed formula. While no one estate is allowed to reduce its tax value by more than \$500,000, the use value of most farms is still substantially below market value under this formula. To qualify, the land must have been farmed by the decedent or a member of the family for five of the eight years before death, and the family for five of eight years after death. The heir also must keep the land for 15 years or lose at least a part of the tax benefits.

In addition, at least one-half of the estate's assets must be qualified personal and real property and 25 percent must be qualified real estate.

For income-tax purposes, profits on a subsequent sale of the land are computed by using the special-use valuation rather than the higher market value. Choosing special-use valuation to calculate the amount in the estate thus produces lower tax liabilities without increasing the amount of cash in hand.

Under these provisions, then, the estate-tax burden is lowered for those who own enough farmland to qualify. It is lowered the most for those who have the largest estates.

The seeking of this lower tax burden increases the demand for land. Since their eventual tax burden is lowered,<sup>1</sup> people who can qualify through land purchases can pay more for the land than those who do not qualify or who do not expect to die soon. While land purchases by taxpayers seeking qualification under these provisions may not be a large part of all purchases, they are sufficiently significant to increase the price to all, whatever their reason for buying.

In addition to increasing the *demand* for land, these provisions also directly and indirectly restrict the *supply* of land offered for sale. Those who might otherwise sell land are encouraged to reduce estate taxes by holding enough land until death to qualify for special-use valuation. Such land is thus removed from the potential market and does not return to the market until long after death, since the heir must hold the land for up to 15 years or lose some or all of the tax preference. This provision indirectly keeps the land off the market because, in reducing estate-tax liability, it reduces the necessity to convert land and business assets to cash for use in paying estate taxes.

**Income Tax Provisions:** Higher land prices are also encouraged by provisions of the income tax law—specifically, those rules that allow the deduction of the costs of developing an asset (particularly crop-producing perennials and animals) and those that allow capital-gain tax rates to apply to some assets produced by these development costs.

As noted earlier, these permissive tax rules may produce either a very low or, perhaps, if there is sufficient other income, even a negative tax rate on the profits from the farm investment. Because the income and expenses may be reported under cash-accounting rules, the taxpayer has substantial freedom in choosing the time when the tax liabilities, if any, must be paid.

Also, when a farm generates both a high rate of appreciation (upon which taxes are deferred) and a low rate of ordinary income (taxed that year), the high-bracket taxpayer can pay substantially more for land than a low-bracket taxpayer can. If the situation were otherwise—if farmland earned a high current cash return with little appreciation—the low-bracket taxpayer would be relatively competitive in the land market.

In today's inflationary market, high appreciation rates, low rates of cash return on farmland, the lack of taxes on unrealized appreciation, and allowing interest payments to be deducted when calculating taxable income, all combine into a powerful inducement to buy and develop farm assets, particularly land.

Because tax benefits are proportionate to the tax rate on the income sheltered through these rules, the greatest inducement is offered to the wealthiest and highest-income taxpayers. Consequently, many farm assets—but particularly land, certain real estate improvements, and capital gain-yielding assets—are very attractive to high-bracket taxpayers who have income (either farm or nonfarm) that can be sheltered from tax and can afford to carry land.

Some of those taxpayers are farmers by any definition. Others, however, rely largely on nonfarm pursuits for their income. The farm assets were purchased solely to reap these tax benefits. Farm assets have thus become relatively more valuable to these taxpayers, who have bid up the price for all farmland.

### Consequences of Higher Land Prices

The increase in land values produced by the new estate-tax rules under the 1976 Act is a one-time increase, fully effective only when equilibrium is reached, with the oldest and the highest-bracket potential estate-taxpayers owning the land.

It should be kept in mind that the land market is a local market, and any national trends at work would be felt differently in different locales. But, generally, landowners who held land in 1977, when the transition to higher values commenced, have profited the most. Others who bought or who perhaps can now buy—if the transition is not complete in an area—will also benefit from the higher values so induced.

Those who bought for estate-tax purposes will not, however, be able to realize these higher values through sale. Nor will their heirs, unless the sale is postponed for a long period after death, because sale will cause a loss of the estate-tax benefits.

The farmer who seeks the estate tax benefit will tend to hold land, as will the heirs. Not all buyers and sellers of land will seek the estate tax benefits, however. Some of them will simply be interested in the profits to be made from buying and selling land—from speculation, in other words.



The higher values result in the transmission of larger estates to heirs. Since the monetizing—converting to cash—of these higher values by sale during the 15 years following death comes only on pain of losing the tax benefits, the heirs undoubtedly will be slow to sell. This reluctance to sell will undoubtedly be reinforced by the higher taxable profits that would be realized on sale of land valued under the special-use provision.

These features tend to lock heirs into their land. If they want to convert these higher values to cash, they must borrow on the land and pledge it as security for a loan. Higher debt structures are thus encouraged; greater financial instability may flow from an unexpected downturn or weakening in prices—as occurred in 1977 and 1978, for example. The greater land values may also induce a feeling of security that will argue against saving from annual returns.

Other segments of society will also deal with the higher values. For example, the local assessor may translate them into higher assessed values and, thus, higher property taxes. Higher property taxes will, of course, decrease the farm's annual income.

While both the estate- and income-tax rules thus argue for higher prices and then the separation of ownership from operation, the benefits of special-use valuation will not be available unless the decedent and an heir both participate in management. It is thus likely to induce retired farmers or inactive landlords to restructure their arrangements.

Certainly for the future, participation in farming decisions by landowners will be encouraged. Historically, this kind of arrangement has been carried on through crop-share tenant arrangements. Yet, such tenant arrangements could bring liability for the self-employment (Social Security) tax. This burden may in part be offset by the eligibility for Social Security benefits that flows from the self-employment tax.

The resolution of this potential conflict between Social Security and estate-tax rules argue for an increase in tenant farming. If the alternative to crop-sharing tenancy is an employee-employer relation, the recordkeeping requirements and labor-tax costs associated with hiring a manager as an employee likely reinforce the push toward tenant farming provided by the estate tax. It may be that the tax laws, on balance, will encourage a tenant-landlord relationship through sharecropping.

### Growth and Continuity of the Firm

*Incentives to Incorporate:* The tax-rate schedules for corporations and noncorporations differ substantially. Beginning rates are lower for individuals, but they soon rise to rates that are higher than those applicable to corporations.

When income reaches \$25,000 or so, the corporate taxes on income are likely to be less than taxes paid by a sole proprietor on the same amount of income. Even better, if some income first earned by a corporation is paid out as salary to an employee-shareholder, the income is split between the corporate schedule and the individual schedule and lower rates are produced on both schedules. As income rises, the size of the tax benefit from incorporating increases.

In addition to the benefit of lower rates, a corporation may deduct the cost of providing substantial, tax-free fringe benefits to its shareholder-employees. These expenses frequently could not be deducted (or deducted only in lower amounts) if incurred directly by an individual.

Corporations also facilitate the transfer of property to others in the family. The transfer of fractional interests in farm assets is typically a relatively complex matter. In contrast, if the assets are first transferred to a corporation, gifts of partial interests can easily be accomplished by giving away a part of the stock in the corporation.

Not only do corporations thus facilitate transfers, but there may also be a tax bonus to be gained. If the stock does not carry control of the corporation, it can frequently be valued at less than the value of its proportionate interest in the corporation's assets. Some observers believe that further discounts in value may be taken if the stock has no market, and stock in small farming corporations likely will not have a market.

There are some costs, including tax costs, that are higher for corporations. The Social Security tax on an employee's salary is higher than the self-employment tax. In some cases, what had been profits for a sole proprietor before incorporation will become wages paid to an employee-shareholder and therefore subject perhaps to unemployment taxes and even workers-compensation contributions.

Even so, under the present tax structure, corporations will frequently incur less immediate tax costs than an individual.

Having encouraged the transfer of assets to corporations through lower corporate tax rates, the tax law then raises a new set of problems.



First, putting the corporation's earnings into the shareholder's hands can usually be done only at a higher tax price—an individual income tax paid by the shareholder on the dividends. This tax on the shareholder can be avoided by not paying out the earnings, by allowing them to accumulate at the corporate level. While accumulation at the corporate level is encouraged, that route is not without obstacles either. When accumulations of earnings inside the corporation reach \$150,000, the possibility of an additional corporate tax on further accumulations arises, unless the additional accumulation serves the reasonable needs of the business.

While the "reasonable needs of the business" is not an easily defined concept, it does include the expansion and growth of the firm through asset purchases. The firm thus is induced to grow, to prevent the disagreeable alternatives of either the accumulated-earnings tax or the tax on dividends.

While the tax rules do not require that the growth be in the same business that produced the earnings, few small entrepreneurs will be inclined to take on responsibilities in an unfamiliar business. The conclusion that expansion will normally be in the farm business seems warranted.

Death may offer a good chance to remove some of the earnings from the corporation at bargain tax rates, through a redemption of shares that will be treated as a sale of the stock. A sale may not have any tax consequence, because the basis of the stock for computing gain will be equal to its value. Since this opportunity is literally a one-time matter, the assumption at the corporate level of new financial burdens at a shareholder's death, to provide funds for the redemption, may be encouraged. These new burdens may weaken the firm significantly—at a time when there also might be a shift in management to add to uncertainties.

Both lifetime and death transfers, then, are facilitated by incorporation. There is, in turn, more likelihood that the firm will be continued. Firm continuity may mean that few assets will be liquidated. The supply of farmland—for farming or to expand an existing operation, especially—may be reduced. Also, if there is no management heir, continuity of the business may mean that ownership and operation are more likely to be separated. Ownership will be maintained to prevent a loss of estate-tax benefits that depend on ownership, but management will pass to others.

In short, *absentee ownership may be encouraged.*

The rules on incorporating a farm are no different from the rules for incorporating other businesses. They do have some different impacts, however, because of farming's uniqueness as a business and especially because the key asset in farming is frequently land. The supply of land is lim-

---

---

*"Farmers are the largest single group of taxpayers in this class [of small and medium-sized proprietary businesses]. The combined effects of inflation and tax policy . . . [by] promoting specialization and mechanization, . . . have led to a form of monoculture, associated with the export of unprocessed agricultural products. This is creating a pattern of one-crop, export-based agricultural activity in the corn, soybean, wheat and sorghum regions that is very similar to the type of monocultural dependence formerly associated with colonialism. In an important and sobering sense, the grain belt of America is acquiring the characteristics of a colony."*  
**Philip M. Raup, at the Washington meeting.**

---

---

ited, and thus generally applied rules have an impact in agriculture that would not be felt in sectors where basic resources are theoretically far less limited.

**Installment Payment of Estate Tax:** The 1976 Tax Reform Act also allowed qualifying businesses, including farms, to pay estate taxes over a period beginning 5 years and 9 months after death and ending 14 years and 9 months after death. Estate taxes on \$1 million of the estate's value qualify for the very low interest rate of 4 percent during this period of extended payment. If the land or business were disposed of during this time, the deferred payments would be accelerated.

This provision may encourage the purchase of business assets that qualify, and farm property will likely be among such assets. The provision is not, however, tied to a particular asset, such as land, and it should not distort land values. Seemingly, it will encourage the transmission and thus the continuity of qualifying businesses. Also, sales of farm assets *before* death are discouraged by this provision since, to qualify, the estate must be comprised of at least 65 percent qualifying business assets.

At the very least, in times of high interest rates the lower interest rate on the tax produced by \$1 million worth of estate may provide so large a benefit that some farms will be held intact and not sold by heirs for the sole purpose of gaining this benefit.

These heirs are free to change the relationship to the assets—for example, from owner-operators to sharecropping landlords—so long as the assets remain in the heirs' hands. Ownership by heirs is encouraged, but a particular *form* of ownership is not. The heirs are free to participate or not participate in later business decisions without losing this estate-tax benefit.

## Taxes on Labor and Incentives to Substitute Capital

*Taxes on Labor:* The Federal tax system imposes two taxes on wages below certain maximum amounts. The Social Security tax is imposed equally on the employer and the employee; it is also imposed on the business profits of the sole proprietor. Contributions for unemployment insurance are exacted from an employer who, in either the current or previous year, employs 10 or more workers at any time in each of 20 or more weeks in the year, or who, in either year, pays \$20,000 in wages in any one quarter. Once either of these thresholds is reached, the minimum wages paid in October will produce an unexpected tax on wages paid earlier in the year.

Frequently, an employer is also required to make contributions to workers' compensation funds. Qualifying criteria and the level of contributions vary from State to State, but they are often significant.

These levies not only impose financial burdens, they also sometimes require the keeping of records that otherwise would not be maintained. Records for Social Security probably need not show great detail. But, for a taxpayer who may be paying wages close to the minimum requirements under the unemployment system, records must be very detailed, to show whether the thresholds were crossed.

For many farmers, the cost of the tax may not be thought to be as onerous as the cost of maintaining records necessary to demonstrate whether the tax is due. Since the record-keeping system must be in place for those who may be close to the minimum requirements, it could discourage the use of labor beyond amounts that quite clearly will not result in a liability for tax.

If the record-keeping system were implemented, then the operator close to qualifying might monitor the use of labor very closely, to prevent qualifying for the tax. Since States have an initial fixed charge for some of these taxes, the marginal cost would be highest to those who barely exceed one of the qualifying minimums.

Consequently, the use of small amounts of additional labor may be discouraged among those already near the qualifying point. For those at the edge, the tax can also create uncertainty about total labor costs.

A farmer in that position might deal with the uncertainty by buying more or larger equipment and substituting it for labor and, thus, move further below the qualifying point. By doing so, the need for records and the uncertainty of knowing whether the tax would arise could be reduced. In contrast, if liability for the taxes were an accepted matter, the marginal costs and complications of the recordkeeping can be reduced by spreading these costs over large increments of labor.

In addition, for those who clearly must pay the tax, costs will be higher unless wages are depressed by an amount equal to these taxes. If wages are reduced by amounts equal to the taxes, then the employee, in effect, pays the taxes rather than the employer.

If wages are not so reduced, whatever part of the tax cannot be passed through to a buyer is paid by the farmer. Therefore, the farmer has an incentive to consider substituting capital for labor that has been made more expensive by these taxes.

Such a substitution is far from a certainty, however. *Increments* of capital may be so large in comparison to the additional labor cost that little or no substitution occurs, at least until a large amount of new capital equipment can be added. Whether, in reality, conditions for substitution occur is simply not known, nor do we know the real incidence of these taxes.

*Capital-Substitution Incentives:* Generally speaking, over the past quarter-century or so, Federal tax policy has moved in the direction of reducing the cost of capital investment. Accelerated-depreciation rules and the investment tax credit have been more notable devices.

The credit does not reduce costs, however, unless there is a tax liability against which it may be applied. Accelerated depreciation means the most to those who can use it to offset income that would otherwise be hit by the highest tax rates.

Thus, accelerated depreciation and other similar deductions likely confer the greatest benefits on established operators or high-income beginning farmers. They provide few benefits for those who have small incomes and little capital. These rules may thus tend to favor expansionists over those with few nonfarm resources seeking to enter farming.

For those who benefit from these tax provisions, the cost of capital will be reduced. Except in times of equipment shortages, the benefits likely are not captured by the seller of the equipment but rather by the purchaser.



Whether that benefit increases the buyer's cash return is questionable. Some economists have theorized that returns to farmland are the residual returns in agriculture. If this theory is partially or wholly valid, even these benefits on machinery and equipment may find their way into the landowner's hands. If so, these provisions, too, have helped maintain an upward pressure on land prices.

### Prices of Products

Under regulations issued very early in the history of the income-tax law, the costs of developing trees and vines that produce fruits and nuts have been deductible as they were incurred. In reality, these costs are capital costs; in most pursuits, the tax rules generally do not allow the deduction of capital costs from current income. The proceeds on subsequent sale of the assets produced by these costs often are taxed as long-term capital gains.

Since the development deductions reduce ordinary income that frequently would bear very high tax rate, and since the deduction might produce capital gain, development of these crops is an ideal tax shelter. The tax benefits flowing from the deductions are much larger and are realized earlier than the tax liability incurred upon the sale of the improved property.

The overall effect is that of a negative tax on these developments. In other words, the financial returns from these costs are enhanced, rather than diminished, by the tax system.

This negative tax effect exists *only* because the taxpayer has other income, either from labor or other investments that, without the tax shelter, would be subject to ordinary income tax.

This subsidy through the tax code could be syndicated and sold, so a number of firms began to offer high-income taxpayers a chance to "buy into" development schemes which converted current income into assets in the forms of livestock herds, orchards and vineyards. Because of concern that production would be overstimulated by these investment syndicates, citrus and almond growers persuaded the Congress to repeal those rules for their commodities. The shelter continued unabated for other perennials.

The shortrun results of requiring development costs for citrus and almond growing to be treated as capital costs, rather than expenses deductible from current income, were slower increases in production and hence increased prices of these products.

Where the tax-shelter provisions remained, production increased and the prices for the commodities decreased. In the long run, however, supplies of crops in which development costs had to be capitalized also increased, in re-

sponse to those temporarily high product prices, and these larger supplies eventually resulted in lower prices for the crops.

While the structural implications of those lower product prices are not clear, the use of that provision does raise significant questions about efficiencies and resource allocation—among operations and geographically—and thus it undoubtedly affects structure. Moreover, those taxpayers in a position to exploit these tax provisions can outbid small farmers or would-be beginning farmers who do not have large incomes or wealth from other sources.

### Changes in Management Practice

Several features of the tax system affect management practices and therefore bear on efficiency and allocation of resources. A few examples will illustrate these developments.

Until recent years there was little interest in fattening cattle in large feedlots that were not integrated with a farm or farms producing the crops to feed them. In the mid-1960's, several promoters found that, by placing cattle in feedlots, they could construct and syndicate tax shelters that had the effect of deferring for one year the investors' taxes on income generated in other pursuits. The maximum deferral at the least expense was generated by waiting until late in the year to create the tax-sheltering entity and also having it engage in its transactions near the year's end.

Some observers believe that already volatile livestock markets were rendered more volatile by heavy tax-shelter buying near the end of the year. This heavy year-end buying was frequently followed by heavy selling in the new year, or so the argument runs.

Two consequences for agriculture were attributed to these maneuvers: (1) the fattening of cattle in feedlots was encouraged, and (2) volatility in commodity markets was increased. Whether production or marketing efficiency was increased by these developments has not been determined.

Another example of tax rules' influencing management practices is found in the swine industry. *Without* the tax policy presently in effect, hog producers typically would stock their breeding herd with sows to be used for a number of farrowings before being sold. Sows usually produce larger litters and provide better care for the offspring after the first litter. The use of mature sows, however, increases the proportion of total hog sales from animals under one year of age.



The tax code, however, discourages this practice. It allows the sales proceeds from *breeding* stock held more than one year to be reported as a long-term capital gain rather than as ordinary income, the way proceeds from the sales of other hogs must be reported. Therefore, there is a tax incentive to farrow the gilt (a sow being bred for the first time), and sell it after a year, replacing it with another gilt. The number of gilts "moved through" thus can be economically quadrupled, and the amount of income subject to capital-gains rates (rather than higher ordinary-income rates) increased. The practice of using gilts for a single litter, despite the inferior farrowing and mothering qualities, has spread with the sole purpose of reporting a higher proportion of total hog sales as capital gain—a dependable annual tax break.

Under cash-accounting rules, income is taxed only when cash or its equivalent is received; expenses are deducted only when they are paid. Under these rules, then, taxes can be deferred by prepaying expenses and deferring the receipt of cash from sales of commodities. In combination, these techniques may offer the opportunity to defer a considerable amount of taxes.

Timing of cash receipts and expenses, therefore, sometimes depends more on the tax consequences than on commodity-price trends and prospects.

Such deferral has another dimension. If next year's expenses are paid prematurely, or if this year's income is deferred to next year, income and the potential tax bill in the following year will be increased dramatically unless these practices are adopted again.

Given the progressive structure of our tax rates, there is a significant incentive to engage in these practices on a recurring basis. Each year, the same alternatives are presented: pay up for last year's tax-deferring practices or take a large bite out of taxable income by pushing some of last year's tax forward through deferrals of more income and anticipation of more expenses. Such growing deferrals and anticipations ultimately are reconcilable only by expanding operations.

By continually engaging in such tactics, tax liability (frequently a growing one) is deferred into the future until the operation ceases. Then all of the previous years' deferrals can come to rest in a single year. Sometimes this liability is taken head on, but, frequently, the farmer may realize that absolution can be gained after death.

Death absolves these past tax liabilities by allowing the tax basis for all assets to be moved to market value, in the hands of the decedent's estate or heirs. This fair-market-value basis will likely reduce or eliminate the tax on prior years' crops. There is thus a further encouragement to maintain ownership of the farm assets until death.

## Summary

Research has shown that Federal tax policies impact on the structure of agriculture in several important ways:

- Higher land prices, reduced land sales, and increased concentration of land ownership, all of which contribute to increased tenant farming and to concentration of wealth (land) in the hands of those who did not earn it.
- Strong incentives for larger farm operations to grow, substitute capital for labor, and use debt heavily—all contributing to concentration in farm ownership and production and to more capital-intensive technology.
- Artificial incentives to high-income taxpayers to invest in certain farming activities solely to be able to shift income taxable at current income rates into capital gains taxable at lower rates. This distorts the use of land and other resources and thus probably reduces overall economic efficiency in the farm sector.

The chief tax provisions which permit and encourage the above developments include estate-tax provisions which have been liberalized to benefit present landowners, cash-accounting provisions, and capital-gains rules. The first two of these provisions were provided to meet what appeared to be legitimate and unique needs of farmers but without regard for their longer-term consequences.

It is important to note that the extensive ability to exploit the tax provisions and thus generate the structural consequences noted above depends not only on the tax bracket of the taxpayer, but also on the presence of persistent *inflation*, particularly inflation in land values. Were land values not rising, much of the *incentive* to exploit the tax laws—especially to shift current incomes to capital gains—*would be reduced*. Thus, this analysis of tax-policy effects reinforces our understanding of the debilitating impacts of inflation and the importance of making sure that our public farm policies do not unnecessarily contribute to land-price inflation.

## Footnote

1. Arguably, the tax burden faced by the heirs will be higher because the basis from which profit is computed on a sale of the land by the heirs will be the special-use valuation, rather than the higher fair market value. As a consequence, the taxable gain on a sale by the heirs is higher by the amount that the taxable estate is reduced. If special-use valuation is elected, however, the heirs usually must defer selling until 15 years after death. Such a remote tax liability, especially in periods of high inflation rates, probably would not be given much consideration in determining the price to pay for land while the decedent still lives.

## Selected References

- Barkley, Paul W. "Some Possible Effects of Economic Security Taxes on the Structure of Agriculture in the United States." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Boehlje, Michael. "An Analysis of the Implications of Selected Income and Estate Tax Provisions on the Structure of Agriculture." Economics and Statistics Service, United States Department of Agriculture. Forthcoming.
- Boehlje, Michael and Charles Davenport. "The Effect of Tax Policy on the Structure of Agriculture." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Boehlje, Michael and Ken Krause. "Economic and Federal Tax Factors Affecting the Choice of a Legal Farm Business Organization." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Burt, Lawrence A. and M.E. Wirth. "The Economic Consequences of Alternative Tax Reporting Methods on the Financial Growth of Pacific Northwest Farms." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Carman, Hoy F. "The Estimated Impact of Orchard Development, Cost Capitalization Provisions on California Orchard Development." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Collins, Robert A. "An Analysis of the Impact of Federal Income Tax Laws on the Willingness of Various Classes of Landowners to Engage in Soil and Water Conservation Projects." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Harl, Neil. "Influencing the Structure of Agriculture Through Taxation." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar on October 30, 1980. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Hjorth, Roland L. "The Effect of the Federal Tax Structure Upon the Ability of Farmers to Purchase Agricultural Land." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar on October 30, 1980. Structure of Agriculture Project, Office of the Secretary, Washington, D.C. Forthcoming.
- Olsen, Alfred J. "Taxes and Agriculture: Some Observations." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar on October 30, 1980. Structure of Agriculture Project, Office of the Secretary, Washington, D.C. Forthcoming.
- Ridenour, Philip. "Federal Income Taxation and the Trend Toward Family Farm Corporations." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar on October 30, 1980. Structure of Agriculture Project, Office of the Secretary, Washington, D.C. Forthcoming.
- Wile, Phillip H. "Federal Tax Laws and the Structure of Agricultural Operations." Paper presented at the Federal Taxation and Structure of Agriculture Seminar on October 30, 1980. Structure of Agriculture Project, Office of the Secretary, Washington, D.C. Forthcoming.





One of the oldest forms of major Federal public assistance to individuals in the history of this Republic is the 48-year-old collection now commonly known as the "farm programs."

Direct action to control commodity production and compensate growers was the first of the major income-redistribution statutes of the New Deal. Every four years or so since, the Congress and the Executive Branch have repeated the arduous ritual of fine-tuning the basic legislation and then reauthorizing the programs for another period.

These so-called "farm bills" are, by and large, the embodiment of what constitutes this Nation's farm policy. In recent times, modifying that legislation—by authorizing statute or appropriations-bill language—to meet one "crisis" or another has become an annual or even semi-annual event.

The content of that policy has generally been bipartisan, determined more by the economic conditions in the farm sector at the time than by the ideology embraced by either political party.

That policy has always tended to follow events and changes rather than anticipate and lead them—that is, the approach to developing policy has largely been reactive, dealing with one emergency after another.

Times of a studied, deliberate approach to the design of a forward-looking farm policy, rather than adjustment of the previous statute, have been rare. Careful attention to more than the immediate national effects of the programs used to implement policy has likewise been scarce.

There is little doubt that some of the programs that have resulted from this *ad hoc*, crisis-oriented policymaking have subsequently exacerbated problems of farmers or, over time, produced unintended and unwanted consequences for the farm sector as a whole.

Even when these side-effects have been recognized, it has been next to impossible to secure any significant program modifications because, as with most public-policy programs, once they are enacted, a constituency is formed: the beneficiaries of the programs, those who speak for them, and, more frequently than we like to admit, a captive bureaucracy.

The burden of change is always on the "reformers"—whether an organization outside the official institutions or an Executive Branch faced with burgeoning budget outlays, rising inflation, and similarly broad problems, in the name of which little political leverage is available to achieve specific program reforms.

Today we recognize that agriculture has passed a major stage in its evolution and that the present farm structure is far different from that existing when the basic structure of the programs was devised. But, even so, there is little sense of urgency expressed within the *institutions* most directly involved for a major reexamination of the programs and careful, creative thought as to what might be most appropriate for the future.

However, such a sense of compelling need for that evaluation and thought was clearly, deeply expressed within the farm community and that part of the general public who participated in the Structure of Agriculture Project meetings or mailed their opinions to the Secretary.

The message of grass-roots opinion and the findings of recent research agree: those of the old approaches that are based on outdated assumptions and a structure of agriculture that has since changed markedly are going to prove grossly inadequate for the future.

### **Commodity Programs and Farm Incomes**

The commodity programs arose out of a need to ameliorate the low incomes of farmers, to bring their incomes closer to the rest of the population.

Farm incomes were persistently low due, in large part, to the tremendous force of technology on agricultural production. With this technology and our land base, farmers simply produced more than the domestic and foreign markets could absorb at prices that would give incomes sufficient to allow farmers to share in the rising standard of living the rest of the population was attaining. The problem proved to be chronic, and incomes remained depressed over the years.

The initial goal of farm policies was to transfer income from other taxpayers and consumers to farmers who were disadvantaged by the technological advances that were, in part, supported with public funds and programs and benefitted the whole of society by improving the quantity and quality of the food supply.

The major program instrument used in pursuit of this goal was artificial commodity pricing—supporting prices above those that would otherwise prevail in the market. This was done through the nonrecourse loan program, which, in essence, established a floor under the market prices for grains, cotton, tobacco, and peanuts.

Growers borrowed money from the Government with the crop as collateral. The amount loaned per unit was based on a notion of a "fair" price for the commodity.

If the market price fell to or below the loan rate, and the farmer decided to forfeit the crop rather than sell it at the market price, then the Government through the Commodity Credit Corporation (a quasi-governmental corporation established in 1933 solely for this purpose) took possession of the crop under loan (accepting it as full collateral)—serving as a market of last resort and effectively setting the minimum price paid to farmers.

The CCC stocks became excessive, requiring growing Government outlays. Farmers were then required to reduce the acreage planted to the surplus crops in an attempt to bring commodity supplies into closer accord with projected market requirements. But advancing technology and greater use of relatively cheap fertilizers and chemicals kept increasing yields per acre, so surpluses and high government costs persisted. This condition was viewed as a chronic, not a temporary problem.

Those basic programs have lasted over the years with many minor, but few major alterations. By the late 1960's, the price-support loan rates were consistently higher than world-market price levels; large stocks accumulated which could only be sold into those markets at subsidized prices.

In 1963, direct income-support payments were adopted so that price supports could be reduced to world-market levels without reducing the total income support to farmers. That separation of price support and income support was a key to our subsequent competitiveness in world grain markets and is continued in the program structure today.

Eligible producers receive the difference between a Government-calculated target price and the market price if the market price is lower. Those deficiency-payment provisions were introduced in 1973 but were not triggered for three seasons.

### **Commodity Program Impacts**

In the light of economic conditions in farming having changed far more than the basic structure of those programs, it is important to evaluate their efficacy and their roles both in relative isolation and as an influence on those changes.

Whom did these income-enhancing programs benefit? Did they create conditions that propelled the farm sector along the paths that developed? Have the programs been equitable, helping the small and large farms alike? How have these programs influenced the structural characteristics of the farm sector?

While the price and income programs succeeded to some extent in raising commodity prices for the farm sector, professionals and lay people alike recognize that this was not their only impact.

They have almost certainly fostered the continued growth in the size of farm firms, caused the program benefits to be capitalized into land values, at times promoted production beyond market needs or the producers' best interests, and sometimes fostered a less-than-efficient allocation of resources.

### **Distribution of Benefits**

The amount of benefit from the programs to each farmer has always been closely tied, not to individual needs, but to the *volume* of production (in bushels, bales, and pounds) on a farm. The rates for price supports and, after 1963, for the income-support payments are based on the assumption that a "national average farmer" is a valid concept. The programs have never fully reflected the wide diversity in farm sizes and crop mixes (on or among farms).

The inherent tendency of the programs to skew the distribution of benefits to the larger producers has been well-known and documented for 20 years. But the full extent of the disparity is made strikingly obvious by a soon-to-be-published examination of the distribution of the direct payments under the 1978 programs, which included acreage set-asides.

Thirty percent of the farmers (739,105) participated in the wheat, feed grains, rice and cotton commodity programs in 1978. Based on numbers alone, participation is proportionally largest for the smaller farms. But, because payments (deficiency, disaster, and land-diversion payments) are disbursed according to the amount of production on each farm, most of the total payments went to the largest farmers:

- Ninety percent of the participating farmers had a Normal Cropland Acreage (NCA) of less than 500 acres. They received only 54 percent of the payments.
- The smallest 30 percent of the farmers received less than four percent of the payments.
- The larger farmers with an NCA of 500 or more acres—10 percent of all farmers who participated—received 46 percent of the payments.

The average size of payment ranged from \$365 for farmers with an NCA of 70 acres or less to \$36,000 for farmers with 2,500 acres or more.



Eighty-five percent of the payments went to farmers in the North Central and Plains regions: the feed grains and wheat areas. The concentration of payments among a few, larger farmers was highest in the South: the cotton and rice areas.

But, what about those farmers who did *not* participate in the programs?

The farm size of participating corn and wheat growers is nearly double that of nonparticipants. Simply put, participants in commodity programs are the larger farmers and, of the participants, the largest farmers receive most of whatever benefits the programs offer.

The commodity programs have succeeded to some extent in supporting prices received by all farmers—both participants and nonparticipants. But the evidence clearly suggests the programs have distributed income to the largest farmers, not necessarily on the basis of need.

An obvious question is: If the programs have been of most benefit to the largest farmers, why was this program structure perpetuated?

The answer is, in part, simple: The programs would not have worked without the participation of the large producers. Since the large farmers produce the bulk of the commodities, they had to be enticed into the program—enticed to set-aside land, divert acres, *et cetera*—so that production would be reduced enough to appreciably increase market prices for all farmers.

Commodity programs, to be effective, must attract those who most influence national production totals. But, in so doing, they inequitably distribute the benefits, presenting a dilemma in policymaking that has never been effectively resolved.

The relevance of this for the structure of the farm sector is that the larger producers received greater payments and are likely the ones who can use the tax and other programs in combination to the greatest advantage. This, of course, would increase their competitive edge in bidding for, and being able to make payments on, additional land and machinery. Thus, the way payments were distributed by the Government perhaps contributed to the consolidation of smaller farms into fewer and larger farms.

### Payment Limitations

Primarily, attempts to rectify the imbalance in volume-based program benefits have centered on some form of payment limitation as one means to prevent the big farmers from receiving huge amounts. Such a limit was finally adopted in 1970. It and successive limits, some of which have been undercut by less-publicized exemptions in the following year, have never proved effective.

---

---

*"Consumers are willing to pay the price for guaranteeing a safe, healthy food supply. We are not willing to continue to pay for the special protections given to agribusiness to prevent them from having to compete in the free-enterprise system. . . . From a consumer's standpoint, it's always been our position that the broadest number of efficient producers serves the consumers best, and that all segments of the agricultural community should be maintained to the extent that that's possible. . . . I think Government always had a valuable role to play in minimizing risk-taking for certain ventures as a public policy. I think encouraging an adequate supply of food for the country has to be one of our highest orders."*  
**Harry Snyder of San Francisco, Calif., in Fresno.**

---

---

The payment limit in 1978 was \$40,000 per individual (excluding disaster payments). The impact was negligible. Only 1,184 farmers—0.2 percent of all participants—were directly affected, and the total Treasury costs were reduced only 1.33 percent. Without the limit, those 1,184 farmers would have each received an average of \$20,000 more, for a total of \$24 million.

The programs make no provision for taking the amount denied the larger farmers and redistributing it to those farmers needing more assistance.

Nationally, two-thirds of the farmers affected by the limit had a Normal Crop Acreage of more than 2,500 acres—90 percent had at least 2,000 acres. Farmers with less than 1,000 acres were virtually unaffected by the payment limitation.

The effects varied among regions. In the South, nearly 90 percent of the affected farmers had more than 2,500 acres, while in the Northeast only 50 percent did. Except for those in the South, producers with planted acreage under 1,000 acres were unaffected.

The payment-limit concept undeniably prevents multimillion-dollar payments being made to a handful of producers. Publicity about such large payments earlier raised the ire of urban legislators. But, to ensure large participation in a volume-oriented program, the limits could not have been much lower than they were. Therefore, the limit is essentially a political compromise, having no real substantive effect on the distribution of program benefits or the workings of the agricultural economy.



Other means of shifting payments from the larger to the smaller producers are advanced from time to time, and the testimony in the meetings for this project included many of these. For example, one is to graduate payments on the basis of size of farm sales. This approach would limit payments—per unit of production—by farm size. That is, a small farm would receive a “high” target price, with the rate gradually declining as farm sales size increased. Some other graduation schemes were advanced, under which the payment limit would be lowered as dollar sales rose and farms above a certain amount of sales would be ineligible for payments altogether.

While such approaches have appeal, they would be difficult to administer. They might also provide incentives for producers to “farm the programs”—to limit farm size on paper to be eligible for higher benefits. A graduated payment approach could also distort the efficient allocation of resources if the wrong price signals were given to small producers.

More importantly, however, income-increasing programs are probably no longer generally needed for the large farms. Their problems relate more to cash-flow and the stability of receipts and expenses—the stability rather than the level of incomes.

Any remaining need for income-supplement assistance rests with the small and medium farms, those with sales between \$5,000 and \$200,000.

The very smallest units, though defined as farms by the Census, are likely overwhelmingly rural farm residences, with the occupants’ basic incomes derived off the farm.

Regardless of categories of relative need, recent research and analysis, to be finalized and published later, strongly suggests that the use of *commodity* programs is an ineffective and inefficient way to solve *income* problems. Other, more direct approaches would undoubtedly prove to be a more efficient, more equitable expenditure of tax dollars. Instead, the case for farm programs rests upon the fact that farmers need protection against sharp declines in prices and incomes. That is, income protection (stability) instead of income enhancement should be the appropriate role of any such programs today. The existing programs, with some important exceptions, however, have evolved in the direction of stability.

#### Capitalization of Benefits

Another problem generated by the commodity programs, also long known and long left unresolved, is that the benefits tend to get capitalized, or bid into the price of land.

Since the benefits are proportional to the amount of production, they tend to be capitalized into the value of the most limiting resource, land.

Individual farmers already have incentives to expand farm size to increase total income. The capitalization aspects of commodity programs help them realize this objective.

Program benefits that lead to higher land values accrue to the owners of farmland. But, landowners are no longer synonymous with farm operators. This is of crucial importance because renters cultivate over one-half the acreage of crops. Generally, the major commercial growers rent just under half of the acreage they farm. The average acreage of full owners—who rent no extra land—is about one-third the national average; that of places run by hired managers, roughly 10 times the national average.

Thirty-five percent of the acres worked by participants in the commodity programs are rented acres. Therefore, a large proportion of the program benefits that become bid into higher land prices and then higher rents simply increases the wealth of landlords who are not farming their land. These benefits were originally intended for farm *operators*, not necessarily nonfarming landowners.

#### Location of Production and Misuse of Resources

Commodity programs have transferred to the society as a whole a substantial portion of the risks that farmers face in producing our food, feed, and fiber. Putting aside for the moment the benefits that society has received in return, such a reduction in risks may have shifted the use of resources in ways that were unintended.

For example, the disaster payments reduced the risk of farming in dryland areas, perhaps encouraging the cropping of land unsuited for that purpose and sometimes even the production of a crop (wheat), the supply of which was already far out of balance with demand. Now, in some of those areas, the reservoirs of underground water resources—for anyone’s use—have been seriously, perhaps irreversibly depleted, or the soils need and will need extraordinary conservation measures because of the land’s use for crops instead of pasture.

Quite simply, when programs guarantee farmers that they will recoup some proportion of their production costs, more acreage of those crops will be grown than would be the case if the farmer bore all the risks of such a decision. Continual subsidy support of this type will result over time in production in a region where a particular crop has no actual comparative advantage.

Basically, the farm commodity programs made producing the supported crops seem more profitable than would have been the case if farmers had received only market prices

that, in theory, reflect the true worth to society of the additional commodities produced. As a consequence of the artificially high prices and profitability, farmers produced more and used more land (and used it more intensively), more water, and more fertilizer and other inputs than market prices would have signaled them were necessary to use.

Therefore, the additional resources used were wasted—producing products with more resource value embodied in them than society (through market prices) would have said those products were worth to it.

The additional production hung over the markets, depressed prices even further, squeezed the profit margins on the crops produced, and added incentives for individual farmers to expand volume to maintain income levels. In yet another way, then, the commodity programs contributed to the pressure for farm firms to grow. With the farmland base relatively fixed, that meant fewer, as well as larger, farms.

These particular effects of the programs occurred in times when at least the original motivations for the programs were more in line with the economic circumstances of the farm sector. But what about today?

### **Agriculture in Transition: The 1970's**

The environment in which American agriculture operates underwent a dramatic transformation in the 1970's, detailed in Part I. Even in the fifties and sixties, while we were preoccupied with chronic surpluses, forces were slowly but surely mounting that would markedly change the economic environment.

Agriculture's increased interdependence with foreign markets largely resolved the problems associated with excess capacity. But this also increased our reliance on sustaining these markets for our exports. Put another way, this increased our vulnerability to even relatively small changes in the economic, political, and weather circumstances around the globe.

Grain prices increased dramatically in the early seventies due to the global situation. World food production declined. In response, U.S. grain exports almost doubled, stocks were depleted, and prices rose to unparalleled heights.

With our shock-absorbing stocks reduced, the U.S. economy was forced to bear a disproportionate share of the global adjustments to this situation.

This disparity arises from those policies of major importers that insulate their consumers (and producers) from world market conditions. Because of this, the import demands of Japan, the European Common Market, the Soviet Union, eastern Europe, and China, for example, are not very responsive to changing world price levels. Their consumers are insulated from major price changes and their consumption patterns vary little in response to changing world prices. Consequently, when world supply or demand changes, the few nations with relatively open markets and no insulating policies experience drastic swings in their prices; they bear the adjustments.

That new economic environment raised worldwide concern about food security and international market stability and renewed interest, in turn, in an international grain reserve. This situation led to increasing awareness of the need for domestic grain reserves, at least, as a buffer against the shocks and volatility of the new relationships. In 1977, the United States implemented the first managed grain-reserve program in the history of the country.

As we look to the 1980's, global supply-and-demand projections suggest that the average growth in foreign demand for agricultural products will exceed growth in supply. This again means increased world dependence on U.S. agricultural products and suggests a reversal of a trend since World War II in which commodity prices decreased in real terms (that is, after being adjusted for inflation).

But there will be considerable variation around this trend—perhaps twice as much as experienced in the seventies. This again underscores the reality that U.S. agriculture is interwoven into the global food markets and is vulnerable to even the smallest changes in supply and demand anywhere in the world.

As the farm sector passed through the major stages of this transition to greater global interdependence and became more susceptible to the destabilizing forces in the world market, the structure of U.S. farms was also being transformed.

In today's economic environment, the agricultural sector is no longer characterized by underemployed resources. Farm-family incomes and the returns on resources used compare quite favorably with the nonfarm business sector; the pervasive problem of the primary farmers we have profiled is *stability* of income, prices, cash receipts, and cash flows.

The instability derives principally from the internationalization of U.S. agriculture but is reinforced by the changed structure of the main-stream farms—those highly debt-leveraged, commodity-specialized operations heavily reliant on industrial inputs.



It is those new realities that suggest careful attention to the appropriateness of the present programs (and the rationale for those programs) for the future. The implications are clear.

The commodity programs were designed to *increase* incomes and had the effect, among other things, of enhancing land values. But, in addition to low incomes no longer being the pervasive problem, more and more of the farmers who participate in the programs do not own all the land they use to grow crops on which benefits are based, and the programs are of little benefit to the nonlandowning operators, renters and smaller farmers.

With resources no longer underemployed, restricting production is unlikely to be needed again at anywhere near the degree once needed. Without that as a principal objective of programs, as well as a means for achieving others, ensuring the participation of bigger farmers (whose incomes are not low, anyway) may no longer be essential for the programs to be effective. The dilemma of distributing benefits equitably while securing cooperation from the segments needed to make the programs work will fade.

### **Commodity Programs in the New Era**

The initial rationale for the commodity programs was in large part derived from the impact of domestic forces external to agriculture—particularly the availability of new technology. In other words, the operation of the national economic system produced results in agriculture that were contrary to our social goals as Americans.

This will likely hold true, too, in the new era in which resources are not underemployed, returns to those resources are, potentially, extremely variable, and the strongest forces are international. The results from this new and less-fettered market will not meet all of society's goals.

Some Government intervention will be required—as most people would agree, while disagreeing on the extent and direction.

One of the areas of public intervention will be the assumption of some of the risks facing the farm industry. Identifying which risks should be assumed or shared, and to what degree, will be the subject of debate.

The most appropriate means for assuming risk are somewhat limited. One obvious means, however, is the grain reserve. The grain reserve has emerged in just a few years as the major agricultural policy tool.

### **Grain Reserves**

The grain reserve, in today's world, is the essential means in place for bringing some assurance of stability to the marketplace.

It is useful for taking supplies from the market when prices would otherwise fall to unreasonably low levels. Once removed, however, these stocks remain available to the market for times when production falls short of or demand rises above expectations. Market prices are left free to fluctuate, allocating available supplies to those willing and able to pay them. But the consumers of grain and the consumers of food are afforded a large element of protection from erratic, extreme, and disruptive price increases.

This protection does not come at the expense of the farmers. On the contrary, the stocks held from the market continue to be farmer-owned; when the grain is needed and prices rise to signal that need, it is the producer who reaps the benefits.

The general public shares in the costs of holding the grain until needed. The entry payment (special nonrecourse loans and storage-cost subsidies) is offered by the Government to producers as an incentive to store grain.

The grain-reserve program has provided a much-needed insurance against runaway prices (up *and* down), the type of assurance producers need to make prudent capital investments and rational financial and production plans.

And the reserve increased the incomes of producers during the abundant harvests of 1977-79. Even though grain growers do not comprise a majority of farmers, farm income would have been significantly lower if the reserve had not been available to isolate the abundant grain supplies and keep prices from falling well below trend.

The benefits of the reserve have regional dimensions as well as national. The program, less than 4 years old now, has allowed a more even flow of marketings within the year, especially in grain-surplus States. A more stable marketing pattern reduces the strain on storage capacity at harvest and provides for more efficient use of transportation and storage facilities.

But how do the benefits of the reserve program flow among the various categories of individual farmers?

The benefits are not equally distributed, to be sure. But it should be kept in mind that this is different from a direct income-subsidy program; it is a risk-sharing venture with a clear, greater public goal explicitly involved.



The larger producers are most likely to use the reserve. A soon-to-be published study of the wheat reserve showed participating farmers had an average cropland base of 1,-100 acres. Those farmers eligible, but not participating had an average of just over 600 acres of cropland.

Predictably, those farmers owning storage space would be more likely to participate than those with little storage capacity or limited access to it. Thus, we can expect the larger farmers, those identified in Part I of this report as primary farms, to be the ones most utilizing the reserve and obtaining the benefits.

But the rationale for their receiving the benefits is more explicit from the viewpoint of the public at large and more justifiable than in the case of the direct-payments programs—particularly so if the other program subsidies offered them were to be reduced.

A fundamental question, especially in view of the projected future environment in which the agricultural economy will operate, is an appropriate *size of the reserve*. A reserve must ensure that total carryover stocks of grain at the end of a growing and marketing season are sufficient to preclude most of the disruptive shortage-induced price fluctuations that could otherwise result.

The marginal benefits of price stability from a grain reserve are inversely related to its size; that is, the smaller it is, the greater the price fluctuation. The general public, through the Congress, has indicated its willingness to pay the subsidy necessary to achieve a reasonable amount of price stability.

At the present time, for example, the corn stocks remaining from the 1979 and earlier crops proved sufficient to stabilize corn prices near the level at which the grain is "called" out of the reserve—but total stocks exceeded 1.6 billion bushels. Corn production for marketing in crop year 1980/81 is nearly 17 percent *less* than the previous, record year. Coupled with strong foreign demand, that smaller crop will cause stocks to be drawn down to "pipeline" levels—or no slack in the system—and force the 1981 market price above the call price. A second short corn crop in the United States or stronger global demand this year would drive U.S. grain prices beyond levels ever imagined.

Although total 1979/80 stocks—the reserve plus amounts held outside this contractual arrangement with the Government—were large, they may not have been large enough to achieve the goal of stability. And because other major nations with which American agriculture is intertwined do not respond internally to such price gyrations, higher ratios of stocks to projected use are obviously required for the future in order to stabilize U.S. prices.

---

*"We regard chronically low farm prices and income as the primary hazard to family-type farm operators and consider them factors which aggravate all other farm problems. . . . There is very little wrong with the past, present and, I hope, future farm problems that more money to the farmer wouldn't take care of."*

**Lowell E. Gose of Des Moines, Iowa, in Sioux City.**

---

The size of the reserve is a paramount question in crafting future policy. But, there are also operational issues to be resolved: How much does the reserve, as implemented, increase total stocks (reserve plus privately-held stocks) beyond the quantity that would be carried without the reserve (through private speculation), and what additional means are available to increase that total? Where, in terms of the long-term market-equilibrium price, should Government set the price levels at which participant-growers are released from their commitments to hold stocks in the reserve?

Even though our domestic reserve can moderate the disruptions from limited production aberrations in the world, the United States simply can never feasibly carry enough stocks on its own to be the primary stabilizing agent for the global market when major production shortfalls deplete global stocks.

Other major importers and exporters will have to be prevailed upon to assume their fair share of that burden or the United States will have take another tack in search of stabilizing mechanisms.

One suggestion has been to sever the link between domestic and world prices once some upper price boundary is reached. This violates competitive-market goals, to be sure, and is the same kind of action that created the instability in the first place—countries insulating their domestic agricultural sectors from world events—but stability is a goal, too. Without an international reserve system, few alternatives are at hand that would not mean some adjustment in competitive principles for the sake of stabilizing the market.

## Disaster Protection

Perhaps the agriculture industry's last remaining claim to uniqueness in the business world rests in its ultimate dependence on biological processes and the vagaries of the weather.

Protection against total failure as a result of natural disaster through publicly subsidized programs is the means whereby the rest of the society absorbs part of this risk involved in producing its food.

Insurance and recovery-credit schemes subsidized by the public or direct indemnity payments help sustain individual farmers. . . according to production volume and abilities to pay premiums or repay loans.

But they also help maintain the viability of the productive sector when natural forces overwhelm it, recognizing a routine, perennial risk of doing business peculiar to agriculture, regardless of the size or configuration of the business.

Any negative structural impacts of the various disaster-protection and -compensation schemes have resulted from the subsidies involved. The subsidies cause misuse of resources and inflated land prices, which, in turn, lead to concentration of production and landownership into fewer hands, through processes noted throughout this report.

Those undesirable consequences can be ameliorated, while preserving the risk-reducing character of the protection schemes, by ensuring that the insurance premium is based upon the actual risk and making the programs more actuarially sound.

## Gasohol

A relatively new consideration in agricultural policy is the large-scale use of food commodities for industrial purposes, specifically the production of liquid fuels.

The Energy Security Act of 1980 subsidizes the conversion of biomass—organic materials—to ethanol for use in gasohol. Currently, corn is the most technically feasible biomass feedstock for ethanol production.

Because of the extent of the subsidies, this program is already increasing the effective demand for corn and promises to do so even more in the future. Yet, corn is already in strong demand for traditional uses as food and as feed for livestock that produce food products.

By subsidizing the use of corn in producing fuel energy, this program indirectly taxes consumers of corn products—direct and indirect—to the extent that the market price of corn is increased for this purpose. Moreover, this program adds to the instability of the price of corn.

There is no doubt that the use of corn to produce fuels, as a substitute for imported petroleum, is not now cost-effective. But this extra cost of inefficiency must be weighed against the potential cost of the disruption that would result from a break in supplies from petroleum exporters in an increasingly unstable area of the world.

Furthermore, gasohol proponents argue that the use of corn for this purpose is temporary; new technology will make nonfood products feasible as feedstocks in the future.

At present, however, this program has great potential for distorting the efficient use of scarce resources, adding to households' food budgets, and increasing the potential for instability in commodity prices.

Programs such as the alcohol-fuels program have implications for farm-sector structure in that they increase the demand for commodities such as grain. Higher prices are then necessary to increase production from the less-productive land. The resulting windfall gains to those already owning the more-productive land are then used to outbid others on any land for sale—once again leading to higher land prices and fewer, larger farms.

## Appropriate Policies for the New Era

A review of the evolution of the commodity programs over time indicates that modifications have moved them from the original objective—of increasing farmers' income to levels closer to incomes of nonfarm people—to more of an income-security objective. They have, in essence, assumed more of a risk-protection role. While such a change in emphasis is clearly consistent with the changing nature of the problems in the farm sector, the programs will still warrant close examination and scrutiny to ensure they will most appropriately meet the needs of the future. A fundamentally different economic future and the greatly changed nature of the farm sector itself suggest that more careful attention to the specific problems of particular groups in the widely diverse farm sector will be necessary to ensure the programs are efficiently operated.

The profile of the farm sector in Part I showed some clear delineation of groups of farmers according to particular characteristics that provoke important policy concerns.



One such group encompasses the medium-sized farmers, responsible for a major share of the food and fiber production. The evidence shows they no longer have a pervasive problem of low income—to the extent that one remains, it is among the smaller farms in that group, those with \$100,000 in sales or less. The major problem facing the larger operators is economic stability—avoidance of wide swings in prices, cash receipts, costs, and incomes that affect their very survival as business entities.

This would suggest that economic-stabilization measures and measures to ameliorate weather-related and biological risks are most needed.

An expanded grain reserve would largely accomplish the former and the all-risk crop-insurance programs would serve to meet the latter objective. The annual commodity price-support loan program could be retained to assist in orderly marketing and cash-flow management, but perhaps should be modified to eliminate the nonrecourse feature not available to businesses outside agriculture. The target-price programs are no longer needed to increase incomes but more appropriately could be maintained as an economic insurance program.

Since it is large producers who most frequently use the reserve—and, because of their large volume of production, they will be most relied on in the future for its successful operation—its entry, release, and call prices could be more specifically adjusted to their needs. That is, cost-of-production information developed from specific surveys of these size farmers could be used to calculate these price levels in a manner that covers their production costs.

A second group of farmers, identifiable by their peculiar characteristics, merits different attention than the primary group. This group, which we have termed *small farmers*, together with those in the medium-sized group who have yet to capture all the economies of size, more nearly resemble the agriculture of old in terms of problems. For example, there may be a significant number with low incomes as a result of their limited resources.

While the stabilization programs provided to the primary farmers would be beneficial to this group (and the programs would be accessible to it), more direct assistance is necessary for most small- and medium-sized farmers to help them overcome the structure-related disadvantages of their size. This could take the form of a modified target price-direct payment program, with the amount of assistance geared directly to the costs of this specific group.

That more careful targeting of programs tailored to specific groups, based on their need rather than their production volume, removes the dilemma long faced by the Congress and the Executive Branch—a low payment limit for equity purposes *versus* incentives to high-volume producers to make the program work. It is unlikely that production-control programs, although perhaps needed very infrequently, will again in the foreseeable future be major instruments of commodity policy. In the instances where they may be needed, a carefully crafted diversion program rather than set-asides will prove to be most cost-effective. Since widespread farmer participation in programs to reduce production and increase market prices is not likely to be necessary, neither is a high payment limit.

A third group of farmers was noted in the profile, the group with very small sales of farm products we termed *rural farm residents*. This group does not appear, as a group, to have pervasive economic problems—neither low absolute incomes nor any great vulnerability from economic instability in the farm sector. Rather, their economic well-being is much more closely determined by nonfarm economic conditions. To the extent any problems requiring public assistance now exist or emerge, they could almost certainly be treated more effectively through nonfarm programs—and agricultural assistance of a more educational, planning, or technological nature—than through any of the commodity programs.

The commodity programs for the more regional commodities—peanuts, tobacco, and sugar—and for dairy are only cursorily treated in this report. This is intentional—most of the limitations and structural implications of the major commodity programs apply, and perhaps even more so, to these programs. Further, the inadequacies of these programs have been documented in study after study.

A rational, coherent, and forward-looking policy must incorporate substantial reform for all these programs, bringing them into the policy mainstream with perhaps greater attention to easing the transitional adjustments.

### Selected References

- Betterly, Susan, Ken Eckhardt and John Groenewegen. "Characteristics of Participants in Commodity Programs." Working Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. 1980.
- Burnstein, Harlan. "An Evaluation of the U.S. Grain Reserves Programs." Working Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. 1980.



- Ericksen, Milton H. and James Johnson. "Commodity Policy Issues for the 1980's." *Southern Journal of Agricultural Economics*. Vol. 12, No. 1. July 1980.
- Groenewegen, John R. and James Johnson. "Graduated Target Prices by Size of Operation." Selected Paper. Southern Agricultural Economics Association Meeting, Atlanta. February 1981.
- Groenewegen, John R. "The Target Price Concept: An Issue Paper on Income (Price) Support." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Johnson, James. "New Policy Direction and Farm Structure." Speech given at the Symposium on Farm Structure and Rural Policy. Iowa State University, Ames. October 1980.
- Lee, John E., Jr. "A Framework for Food and Agricultural Policy in the 1980's." *Southern Journal of Agricultural Economics*. Vol. 12, No. 1, pp. 1-10. 1980.
- Lin, William, James Johnson and Linda Calvin. "Distribution of Farm Program Payments: Do Payment Limitations Make Any Difference?" Contributed Paper. American Agricultural Economics Association Annual Meeting, Urbana, Ill. July 1980.
- Lin, William, James Johnson and Linda Calvin. "Farm Commodity Programs: Who Participates and Who Benefits?" Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Penn, J. B. and William T. Boehm. "Research Issues Reemphasized by the 1977 Food and Agriculture Legislation." *Agricultural Economics Research*. January 1978.
- Penn, J. B. "The American Farm Sector and Future Public Policy: An Economic Perspective." *Agricultural-Food Policy Review*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Short, Sara D. "Concentration of 1978 Deficiency Payments." Paper prepared for the Southern Agricultural Economics Association Meeting, Atlanta. February 1981.
- Walter, Alan S., James Johnson, *et al.* "Prohibiting Commodity Program Payments to Nonfarm Corporations and Partnerships." Staff Paper. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. June 1979.







Assuring farmers access to loan funds at favorable rates and terms has been a part of agricultural policy since the second decade of this century. This policy has been pursued by reducing risks in agriculture to make underwriting it more attractive to private lenders, by improving the workings of money markets and lending institutions, and by intervening directly in the credit market with programs of direct and insured loans and loan guarantees.

New research has revealed that these policies have:

- Achieved the apparent objective of plentiful supplies of capital for farmers, at favorable rates and terms, but
- Also contributed to an inefficient use of resources, an increased dependence on capital- and energy-intensive technology, inflation in land prices, and the concentration of production in the hands of fewer, larger farms.

Those consequences have been exacerbated by the interaction among credit policies, tax policies, commodity policies, and general economic conditions.

The purpose of this section is to describe how and why credit policies have influenced the structure of the farm sector, to suggest what general farm credit policy would be consistent with the goals expressed for agriculture, and to examine how the programs of the major public lender to agriculture, the Farmers Home Administration (FmHA), might be modified to support those goals.

### **The Historical Setting**

Agriculture is financed from the savings of farmers and other owners of farm resources and from borrowed funds. Farmers compete with other borrowers in national money markets for available loan funds.

As a result, farmers' access to private loan funds is affected by the supply of funds in the money markets and the strength of competition for those funds at any given time. However, farmers often are pressured by time and biology—the need to plant within a set period, or the need to market perishables, for example—in ways those competitors might not be.

General economic, fiscal, and monetary policies directly and indirectly impact on money-market conditions and thus are important determinants of the availability and cost of borrowed funds to farmers. Commercial banks are the major institutional agents for servicing farmers' credit needs through the private money markets. In addition, life-insurance companies, merchants and dealers, and individuals are important sources of private loan funds.

Modern credit programs directed specifically at farmers and farming evolved out of the depressed conditions in agricul-

ture following World War I. Farm incomes were low, income prospects were uncertain, and credit was considered risky business by both lender and borrower. Under such circumstances, farmers had difficulty obtaining funds. When they could obtain loans, interest rates were usually higher than for other borrowers and the terms were often unfavorable, thereby increasing farmers' business risks.

Since World War I, and especially since the 1930's, at least four major developments in Federal farm-credit policy have dramatically altered the competitive position of agriculture in securing capital, especially borrowed funds:

- First, the price- and income-support programs and a host of related commodity programs did much to reduce the riskiness of farming, making the sector more attractive to private lenders. Some of these programs, such as those which provided nonrecourse loans on farmers' crops, also reduced the need for private-market borrowing.
- Second, there have been overall improvements in the workings of the commercial banking system that have improved the ability and willingness of banks to service farmers' needs.
- Third, the establishment of the Farm Credit System (FCS), a system of cooperative banks, gave farmers direct access to the national money markets.<sup>1</sup>
- Finally, in the 1930's, the Farm Resettlement Administration, later to become the Farm Security Administration, was set up to deal with farm and rural problems requiring more than credit alone. Basically, assistance was provided the severely economically disadvantaged through planning and supervision, along with credit, as an integrated package. In 1946, as a result of new legislation, this agency was renamed the Farmers Home Administration and its mission was scaled back to that of providing production credit to small and low-income operators, especially those needing management assistance, and ownership loans to help beginners, small farmers, and tenants become viable owner-operators. Today FmHA is the principal public lending agency for farmers and rural communities.

Partly as a result of the Federal initiatives, farmers generally have had access to plentiful supplies of loan funds at competitive costs. In fact, many farmers have obtained more funds at lower costs than their counterparts in other sectors of the economy because of the isolation of some rural money markets (less today than in the past), access to unlimited funds at cost through the nonprofit FCS banks, and subsidized loans from public agencies.

As a result, farmers have greatly increased their use of and reliance on borrowed funds, invested heavily in capital-intensive technology, and increased their use of purchased production supplies (fertilizers, for example) to replace farm-produced inputs. Farm-sector debts increased 13-fold, from \$12 billion in 1950 to about \$158 billion on January 1, 1980, for example. At the same time, the amount of labor used in agriculture declined sharply as farmers substituted relatively cheap capital for relatively scarce and expensive labor.

In short, borrowed funds have become the lifeblood of modern agriculture.

### Prospects for the Eighties

Farmers are expected to continue to increase their use of debt financing in the decade ahead. A study of probable farm credit needs and problems in the 1980's<sup>2</sup> concluded:

- Farm production expenses will more than double. Funds needed to finance annual farm production expenses could increase by more than \$200 billion over the decade, compared with about \$134 billion total farm production expenses in 1980. Most of the additional funds will have to be borrowed, although innovations in equity financing are also expected.
- Farm-sector debt, which increased from \$12 billion in 1950 to \$158 billion in 1980, could be about \$600 billion by the end of the decade. However, asset values of farm businesses are expected to rise to more than \$3 trillion, so the ratio of debts to asset values will not be significantly higher than the 16 to 17 percent-of-assets range of recent years.
- Competition for loan funds will remain strong. Agriculture will remain competitive and will be able to attract its fair share of funds. Farm prices and incomes should begin to rise strongly by the middle of the decade, increasing the ability of farmers to compete for production and investment funds.
- Land prices probably will increase rapidly, especially in the latter half of the decade. This will increase the wealth of landowners but will also increase the difficulty of getting started in farming, especially for those having no other sources of income to subsidize the beginning years. The added wealth of existing landowners, combined with tax advantages, will enable them to outbid other would-be land buyers and thus continue the trend toward fewer and larger farms. Higher land prices will also greatly increase the flow of debt funds needed simply to refinance the ownership of land, generally into the hands of fewer and fewer owners.
- By 1990, nearly 80 percent of the farm debt will be owed by farms having annual sales of \$40,000 and more. Farms with annual sales of \$100,000 or more will owe about one-half of all farm debt. These latter farms are expected to average nearly \$6 million each in assets and nearly \$5 million in net worth. This

means that only slightly more than 20 percent of all farm lending will be to farms with sales under \$40,000, and less than 8 percent will be to farms with sales under \$20,000.

- Large farms will continue to depend more on debt-financing for capital and thus have higher debts relative to assets than smaller farms, which depend more heavily on internal financing (from savings from farm and off-farm income). However, for all sizes of farms, asset values are expected to rise faster than debts, especially in the second half of the eighties, leaving them in an improved financial condition compared to their position at the beginning of the decade.
- Poultry, dairy, and cattle-feeding operations will continue to be the heaviest users among farm types of debt financing. All three of these types of enterprises use capital-intensive facilities and large amounts of purchased feed compared to the value of their sales.

A disconcerting aspect of those projections is that roughly half of the borrowed funds will be used to finance *transfers* of landownership—that is, roughly half of the borrowed funds will add little to the productive capacity of the farm sector. Most of the transfers will be to larger farms, and the money will be borrowed by those with large net worths.

That suggests that a major concern in agricultural policy-making should be assuring the availability of short-term production credit.

Over all, the expectations are that the economic health of agriculture will be sufficiently sound that farmers will be able to compete with other borrowers to obtain funds at competitive rates.

The "primary" farms—those with over \$40,000 in sales, and especially those with more than \$100,000 in sales—are and generally will be earning competitive returns and can compete for funds on an equal footing with other firms in the economy. Since some of these farms will be highly debt-leveraged, they will occasionally encounter repayment difficulties. However, there would appear to be no compelling reason to promote special treatment for them.

The "rural farm residences" having sales under \$5,000 have significant off-farm incomes and presumably will continue to either finance their farm expenses out of internal savings or use nonfarm income to repay loans. Rather than being disadvantaged in credit markets, the majority of these part-time farmers are viewed by many lenders, especially small banks, as preferred customers.



Those farmers who are generally not wealthy and frequently must depend largely on uncertain post-harvest farm income to repay loans are the small farms with sales between \$5,000 and \$40,000 a year. As a group, they tend not to be as heavily debt-leveraged as the larger farms and thus have some resiliency to fluctuations in cash flows. However, those in this group who depend primarily on farming for a living and must incur substantial debt for operating expenses or acquiring additional resources will be quite sensitive to changes in interest rates when they rise rapidly during so-called "tight-money" periods. These are also the farms most likely to be dependent on country banks for their borrowing.

### Structural Consequences of Credit Policies

Credit policies, together with other economic and farm policies, have permitted farmers to make economic adjustments to changing technology and resources, to improve efficiency and incomes and generally to transform U.S. agriculture into the efficient and productive sector it is today. But they have also fostered some corollary developments in the changing structure of the sector and control of its resources.

First, the industrialization process that permitted the development of an efficient and productive food system is the same process that is driving the continuing structural changes that are now our concern in this report. The availability of abundant supplies of funds at competitive (and sometimes lower) rates made it possible and attractive for farmers to rapidly adopt capital-intensive technology, increase their degree of specialization, and increase the use of purchased inputs compared to those supplied from the farm.

That resulted in at least two incentives for consolidation and subsequent growth in farm sizes:

- As increased production pulled down commodity prices, and as increased dependence on purchased inputs increased cash costs, the resulting cost-price squeeze and lower margins of return prompted individual farmers to expand in order to improve total incomes, and
- The advanced technology increased the size of the farm and the volume of production that one person could manage.

Modern, industrialized, high-technology agriculture was built, in large part, on abundant supplies of relatively cheap capital.

Second, research evidence suggests that past credit policies have been responsible, in part, for a misuse or inefficient use of capital and other resources. To the extent that farmers have been able to obtain more funds at lower interest rates than competitive markets provided for the rest of the economy, they have overinvested in capital assets (pro-

ductive capacity) and such production supplies as fertilizer and pesticides. Economists view this as a waste of resources and a cost to society in the form of lost opportunities for higher-return uses elsewhere. This overinvestment in resources and overproduction speeded the industrialization process and the resulting structural changes described above.

Third, in recent years, we have become more aware that past and present credit policies, in conjunction with farm policies and especially tax policies, have contributed to inflation in land prices. Studies have shown that subsidized interest rates, lower downpayments, and longer repayment periods translate into an ability and incentive to pay higher prices for land. The higher the tax bracket of the purchaser, the greater the incentive to incur debt, to deduct interest expenses from income as a current cost for tax purposes, and thus to shift income taxable at current rates to income taxable at lower capital-gains rates.

That process is supported by credit policies which assure unlimited quantities of funds, low downpayments and liberal repayment terms. Specifically, economists have suggested that the liberalization of Federal Land Bank credit in 1971 (reducing downpayments and lengthening repayment periods) contributed significantly to land-price inflation thereafter. As we saw in the last chapter, farm price supports not only increase the potential income flow from land (and thus are bid into higher land prices) but also make land buyers willing to go deeper into debt than they would otherwise, because the risks are reduced.

As a result, the tax structure, farm-commodity programs, and the availability of abundant loan funds at liberal terms have combined to drive up land prices.

Those structural consequences of credit use emerge primarily because of the elements of subsidy and risk-shifting present in farm-credit markets, public farm-lending programs, and farm-commodity programs.

Subsidies, whether in the form of lower interest rates, lower downpayments, or liberal repayment terms, effectively make money appear less expensive than it really is, thereby encouraging borrowers to use more credit and pay more for what they purchase than would be the case if the money were obtained under more competitive market conditions.

Similarly, the ready availability of loan funds for refinancing during periods of repayment difficulty and the availability of public loans to cover natural disasters or economic emergencies effectively reduce farmers' conscious risks and encourage them to undertake riskier activities and to make more capital investments than they otherwise might.



Emergency loans from the Small Business Administration or the Farmers Home Administration both have a subsidy aspect (they supplement the income of those receiving them) and effectively shift risks from farmers to the general public. The Commodity Credit Corporation's nonrecourse loans—since the crop under loan as collateral will always be accepted as full payment—and the disaster provisions of commodity-support programs have the same risk-shifting effect. The public's sharing of private risks is a transfer payment, a redistribution of income from taxpayers at large to those whose risks are reduced.

All of those forces blend with each other and with other public policies to speed the concentration of production agriculture into fewer, larger units. As will be discussed later, even the public programs designed to help the smaller farms have contributed to this trend. These impacts, largely unconsidered a decade ago, have been documented by research and are now more widely recognized.

### **Priorities for Public Farm-Credit Policy**

The Department of Agriculture does not manage or have responsibility for a national farm-credit policy, as such, with the Farm Credit System an independent agency with its own legislation. But the Department does have responsibility for the lending activities of the Commodity Credit Corporation and the Farmers Home Administration and a responsibility to speak to the needs and problems of the food and agricultural system. In that sense, then, it would be an advocate of credit policies that are consistent with the goals for food and agricultural policy outlined earlier in this report.

To review and summarize our findings to this point, we know that:

- The demand on the agricultural sector will be great in the years ahead, as it gears up to meet a growing global demand for food;
- Large amounts of borrowed funds will be needed to finance the expanded output and rising costs;
- An increasing share of production will take place on large farms;
- These farms will be the primary users of credit in the decade ahead;
- These large farms are financially strong and can compete for funds in private markets, although some of them borrow heavily to expand and then encounter repayment difficulties when cash flows are not sustained, for whatever reason;
- Many small part-time farms have sufficient nonfarm income to finance their farm needs, and
- Some small- to moderate-sized farmers who depend primarily on farming for a living may have difficulty obtaining and repaying credit funds.

We have also learned that, to the extent that credit extension includes an element of subsidy or shifts risks from borrowers to others, there are structural consequences, which might not always be desirable in the context of overall food-policy goals.

Therefore, agriculture has a long-term vested interest in credit policies and credit-market conditions which meet its legitimate needs but which minimize the adverse structural consequences and misuse of resources. Given the current mix of borrowers and the structure of the farm sector, that interest would be best served by:

- Assuring that the private money markets and lending institutions work as well as possible (that is, assuring equitable, competitive access to loanable funds by all borrowers in the economy).
- Focusing public farm lending more precisely on those who would not be served by efficient, competitive private markets, but in whom there is a public interest—that is, where a broader economic or social purpose justifies limited distortion of marketplace allocation of capital.

Private money markets are thought to be reasonably efficient and effective in allocating funds to the uses that bring the highest returns. In the general economy, some of the primary distortions in the allocation of funds come not from a failure of money markets but from provisions of Federal income-tax laws that generate misleading signals of true social and economic returns. There are also some distorting influences in the money markets that are not of major consequence but which have some modest implications for structure.

One of these problem areas has to do with commercial banks, especially small country banks. Country banks historically have loaned from reserves deposited in savings and checking accounts. These were low-cost funds and enabled these smaller banks to, in turn, lend to farmers and local businesses at interest rates usually below the prime rates charged in larger money centers. Thus, farmers were somewhat insulated from the effects of national "credit crunches" and restrictive monetary policies. This insulation has largely eroded during the last two years, as banking regulations have changed and competitive pressures have forced smaller banks to offer certificates of deposit and other instruments which, in effect, now tie their costs more directly to the central money markets.

Nevertheless, even during the scarce credit periods during the winter and spring of 1980, farmers continued to borrow from rural banks at rates below those charged by large urban banks. In effect, rural savers have been subsidizing rural borrowers, including farmers. In the future, the ability of country banks to service farmers may depend on their access to the central money markets; access to the Federal Reserve discount window, at terms compatible with the realities of farm lending; development of over-line and co-lending relationships with other lenders, to get around constraints on loan size, and changes in the size and financial requirements of farms.

It appears that country banks will move in one of two possible directions. One direction is to gradually become specialized lenders, focusing on that part of the market serving small and part-time farmers and local businesses. The other direction is to merge with or develop a close relationship with large banks, to overcome their loan-size limits. In this case, they could lose some of their traditional independence and operating freedom and become increasingly the local service outlets for the larger banks.

Banks, then, face some of the same structural pressures as agriculture and the rest of the economy. To improve their competitive positions and their abilities to serve moderate-sized but efficient family farms, public policy could be directed to giving special attention to the regulatory problems of small banks, including giving them greater access to money markets through Federal Intermediate Credit Banks and other means.

The banks of the Farm Credit System, with virtually unlimited access to funds in the central money markets and unconstrained by usury laws and banking regulations, have been the most aggressive gainers in shares of farm lending this century. Production Credit Associations are second only to banks in extending production credit, and Federal Land Banks dominate the market for farm real-estate credit.

These banks pay the going market rates for funds and reflect the average cost of all these funds in the rates they charge farmers. Thus, they are responsive to monetary conditions—but with a lag.

There is no question that the Farm Credit System has served farmers well in terms of being a dependable supplier of competitively priced funds. Its banks have also been progressive and innovative in developing ways of meeting farmers' unique needs. The policy questions here are twofold:

- Have the banks of the Farm Credit System been too liberal in extending credit, thereby contributing to land-price inflation and further concentration in farming?

---

*"The major impact of inflation on agriculture is on land values and the cost of energy and other farm inputs. The initial response to rapidly appreciating land values was positive, as it provided an unending source of credit, even though production returns were not keeping pace. However, the rapid increase in interest rates has now left many growers in the equity-financing trap, threatening their very survival as they attempt to generate enough capital to survive debt."*  
**Allen Wood of Caldwell, Idaho, in Spokane.**

---

- Is it consistent with sound national monetary policy to have what has become a large, second banking system operating outside the purview of monetary authorities, who continue to give high priority to fighting inflation?

Those issues could become more visible and sensitive in the 1980's. Given the importance of the Farm Credit System in farm lending and the importance of lending policies to the structure of agriculture and the achievement of agricultural policy goals, a strong case could be made for improved policy coordination between the Farm Credit Administration and the Department.

Despite the problems identified above, one has to judge that the private money markets and lenders serving agriculture perform reasonably well, and that, by and large, farmers as a group are not disadvantaged by them, although there may be some undesirable longer-term structural implications.

However, the major structural impacts as a result of credit policies probably have come from the public farm programs, including farm lending. It is the re-examination and modification of these programs that offers the greatest potential for reducing economic forces that abet land-price inflation and the continuing trend toward concentration of production and control in the farm sector.

We turn now to the role of the major public farm lender, the Farmers Home Administration.

### **The Farmers Home Administration**

There are three major public agencies that lend directly to farmers: the Small Business Administration (SBA)<sup>3</sup>, the Commodity Credit Corporation (CCC)<sup>4</sup>, and the Farmers Home Administration (FmHA). The FmHA is the largest of these and the most important in terms of reflecting the credit policies and structural interests of the Department of Agriculture. It was also the agency most criticized by name, for poor program administration, at the 10 regional public meetings that began this project.



The FmHA is also closely linked to concerns about the structure of agriculture because of its predecessor's historical role in attempting to rebuild and restructure the farm and rural economies during the depths of the Great Depression and because of its current stated mission of serving farm and rural borrowers who cannot obtain credit elsewhere.

The FmHA program has undergone dramatic change in recent years. In 1960, FmHA administered eight programs, of which farm-operating loans accounted for 64 percent and farm-ownership loans accounted for 14 percent of total funds. In 1979, FmHA operated at least 23 programs, with farm-operating loans accounting for 6 percent and farm-ownership loans accounting for 5 percent.

Emergency-disaster, economic-emergency, individual-housing, rural rental-housing, water-and-waste, and business-and-industrial development loans, along with some grants programs, each accounted for larger shares of FmHA activity. This does not necessarily mean that FmHA has neglected its traditional role. The *absolute* levels (as opposed to percentage share) of farm-operating and farm-ownership loans were record highs in 1979.

What this indicates is that FmHA has become a giant, many-faceted agency that perhaps has been absorbing programs and mandates faster than it can maintain a clear sense of purpose and direction. The addition of large loan and grant authorities in 1980 to support the alcohol-fuels program merely aggravated this situation.

Over \$14 billion in loan and grant obligations were made by FmHA in 1979. In 1980, the FmHA portfolio was nearly 50 times its size in 1960.

The large changes in the size and content of the FmHA program suggest the need to re-evaluate who it is, who it should be serving, and how the programs might be modified to minimize undesirable structural impacts.

The latter concern stems from the fact that FmHA has been the major provider of subsidized credit and emergency loans. Recent research indicates that the very fact that FmHA is a lender of last resort tends to expand farmers' perceptions of their capacity to borrow money safely, encouraging them to pursue riskier production and marketing strategies and more aggressive financial plans.

The emergency lending programs tend to reduce the overall threats farmers face from the weather and in the market and thus have contributed to farm consolidations and higher land prices, through the processes described earlier. The magnitude of their impact may be suggested by the growth in the relative importance of emergency loans. Currently, total public emergency loans outstanding constitute almost 10 percent of total outstanding farm debt.

The emergency lending programs have been referred to as free insurance programs, with the overuse that predictably accompanies any "free" goods. The implication is that these programs substitute for actuarially sound insurance programs and discourage the development of other, private and/or individual risk-management strategies.

#### What Needs Should FmHA Serve?

If credit is anything other than a free good, it will be rationed by competitive markets to those who can afford to pay the cost or to uses that yield more than the cost. Those who will have difficulty obtaining and repaying borrowed funds are the so-called "marginal" farmers, who are often those whose access to productive resources is limited.

But who is included in the marginal-farmer group varies, depending on farm-product prices, interest rates and other considerations. In the winter of 1980, when interest rates were at record-high levels and farm-commodity prices were relatively low, many farmers who would normally qualify for credit were temporarily considered marginal, in the same way that prospective homeowners temporarily found their incomes were inadequate to qualify them for mortgages, until rates began to decline in March 1980. The situation was made worse by an actual shortage of loan funds in banks. After that time, interest rates moderated but have recently reverted to new record highs, while commodity prices have improved substantially. Many farmers considered marginal became "creditworthy" again during the summer as interest rates fell, but the positions of all borrowers have changed repeatedly since then.

Thus, there is a continuum of farmers, ranging from those with sufficient financial strength and resources to weather the hardest of times to those who could not be expected to be able to borrow and repay funds under any reasonable set of conditions. Should the fortunes of all farmers be left to the ups and downs of economic conditions—that is, survival of the fittest? Or are there economic and social reasons for providing some or all of them assistance?

It might be useful to categorize those would-be farm borrowers who would not be served by a reasonably efficient and competitive farm-credit market and to examine some pros and cons of serving them with public loan funds or with changes in public policies to facilitate their being served by private credit institutions.



It will be useful here to recall the earlier conclusion that the policy position on farm credit which best serves agriculture's longterm interests is one that assures that the money markets channel funds to the uses that bring the highest returns, that farmers have competitive access to those markets, and that any deliberate directing of loan funds to other than the highest-return uses be done in a way that minimizes adverse structural changes.

Such redirections usually involve a subsidy and hence a transfer payment from the general public to the targeted beneficiary. Economists suggest that such transfers can be justified on the grounds either that they improve the overall efficiency of the sector or that the targeted group is deemed by society, speaking through the political process, to deserve special treatment. If transfers improve overall efficiency the benefits of that improved performance are deemed to eventually be captured by the public at large. If the targeted group deserves special treatment, the benefits to society of that treatment outweigh the costs and/or any adverse structural impacts.

Earlier in this report, it was suggested that a useful delineation of the present farm population consists of the primary commercial farms, rural residences having farm sales under \$5,000 annually whose owners primarily depend on off-farm income, and the small farms in between. The small farms can be further divided into those who are wealthy, have adequate nonfarm income, or generate a satisfactory net farm income, and those who have limited resources and inadequate incomes from all sources.

There is also continuing concern about the beginning farmer and the difficulty of entry into farming other than by inheritance or access to independent wealth. Finally, legislators are increasingly pressed to provide loans to those farmers, whatever their size and wealth, who face losses because of natural disasters or economic emergencies.

*Large Farms.* It has already been suggested that FmHA has no compelling reason to provide loans to this group of large farms, certainly not those with annual sales above \$200,000. They are efficient and yield incomes on investment that are fully competitive. Their average assets and net worth are quite high. These farms produce two-fifths of our agricultural product sales and should be assured, as a result of their success and prowess, fair and competitive access to funds through private lenders.

*Rural Farm Residences.* This group of farms would not be a productive group for public farm lending to target. With sales under \$5,000 annually, they have little prospect of generating farm incomes adequate to support a family. They generally have nonfarm incomes above the national average for all families.

However, some among these may be genuinely poor and have few off-farm employment opportunities. Where supervised credit would permit the development of a viable supplementary enterprise that would efficiently employ otherwise under-used resources, FmHA assistance would appear to be in the public interest—provided that the borrower could not obtain funds from private sources. Since the aggregate resources involved are small, the overall impact on the efficiency of resource use would be minimal. Where the suggested conditions were met, FmHA assistance might be the best means, economically and socially, of poverty relief.

*Limited Resource Farms.* There are a number of farms in both the small- and medium-sized categories that face credit problems and other financial difficulties. They are the ones operated by persons who are primarily farmers, are not large enough in their operations and sales to generate adequate family incomes, need more resources to be efficient, and are at a competitive disadvantage relative to larger farmers. This group of farmers has been declining in national importance as the farm population has become more visibly divided into a small number of very large producers who sell most of the farm products, and a large number of very small farmers who depend mostly on non-farm income and together produce only a small share of all farm production.

Nevertheless, it is this group of small and medium-sized farms which, if viable and efficient, could most effectively counter or at least moderate the trend toward concentration in the farm sector, and assure the pluralism and diversity necessary for a robust, competitive and more shock-resistant agriculture.

To minimize adverse impacts on resource use and land prices, those in this group who apply for FmHA loans should have to first provide *credible* evidence that credit was not available from private sources. Then, the FmHA loan should be subsidized as little as possible. If analysis suggested that neither a subsidy nor special management assistance is needed, but that the loan simply cannot be obtained from private sources because of the risk involved, then a guaranteed loan would reduce administrative costs and free up limited staff to work with those most needing help. There must be a reasonable likelihood, determined by appropriate analyses, that the loan can be repaid and that the firm can eventually be graduated to private credit.

Some farms in this category could require both short-term production credit and loans to acquire additional land or capital resources. The conditions suggested above imply substantial FmHA staff involvement in each loan.

For those limited-resource farmers who need specialized credit help or terms, the appropriateness of public credit assistance depends on the likelihood that they will successfully graduate to private credit and eventually repay the public investment through taxes, more efficient use of resources, and a contribution to economic vitality and competition in the farm sector. It is for this group of farmers and for beginning farmers, more than any other, that social and economic objectives of policy come face to face.

*Beginning Farmers.* The issue of assistance to beginning farmers is a difficult one. If more people desire to begin farming than there are systemwide opportunities for viable and efficient units, the criteria for selection among the would-be borrowers might be difficult to determine. Not all beginning farmers need public assistance. Many are children or other relatives of farmers and can obtain family help or work their way into the farm operation gradually. Others have financial resources from other sources. Still others begin as renters or tenants, with little real-estate investment required.

The complexity of trying to assist beginning farmers can be illustrated with the problem created by inflation in land prices. Several economists have shown rather convincingly that the high land prices of recent years are quite rational. In other words, in terms of long-term returns to investment from farming and from land-value appreciation, land is a good buy even at today's high prices. But studies have also shown that, if that land were purchased with borrowed funds, the income flow from farming will not cover principal and interest payments during the early years of the loan. This is especially true where the farmer must draw his own livelihood from those earnings. A USDA study of irrigated lands in the western Federal irrigation districts showed that irrigated land purchased at today's prices would generate returns adequate to begin to cover amortization costs somewhere between the 10th and 15th year of a 30- or 40-year mortgage. Land has been characterized as a "growth stock" that might be an excellent long-term investment, but one could not expect to pay for it from the earnings in early years.

This poses a dilemma: only those who inherit land or those who can cover payments from other sources of income can begin farming as owner-operators. A "selecting out" process, strengthened by the impacts of the tax laws on those of different incomes and income sources, chooses which individuals and firms can outbid others for land and thereby further bid up land values. Not surprisingly, the selection process tends to favor those with high incomes, including operators of large farms with high equities in land they already own. In fact, existing farmers buy about two-thirds of the land sold each year; they are the primary entrepreneurs of increased agricultural concentration.

That process indicates coming increases in tenant farming unless loans for beginning farmers could be arranged such that repayment schedules are matched with income flow—that is, more of the amortization could be postponed to the later years of the mortgage. This approach has its dangers. Unless such loans are restricted to those unable to afford early payments, who also intend to farm the land over a long period of time, the loans would increase the returns to the owner's equity in early years, enable him or her to bid up the price of the land, hold it for a few years while ownership costs are still low, and then sell it at an inflated price when repayment costs begin to rise. Such a program could thus worsen land-price inflation unless safeguards were built into it. One possibility, which has been suggested but not studied, concerns Government-assisted loans to beginning farmers who sell before repayment. It has been suggested that they would only receive a specifically limited portion of the capital gains accrued to the land—the rest would be returned to the Treasury.

FmHA assistance for beginning farmers may be justified to slow the increasing concentration of land in the hands of those already wealthy or controlling land resources. As suggested in the previous paragraph, the loans should be restricted to those who are unable to afford early payments and are likely to farm the land over a long period of time. Interest-rate subsidies should be minimized and the loans limited strictly to those who cannot get credit elsewhere. Because of the seriousness of the land-price inflation problem, FmHA might better assist new farmers by encouraging them to begin by renting, rather than buying land. This would reduce credit needs to production items and permit the new farmer to achieve more quickly the size needed for reasonable efficiency.

*Emergency Cases:* Providing public credit to preserve the normally healthy, moderate-sized farm operated by someone temporarily caught in adverse conditions, natural or economic, could be consistent with the long-term goals of agricultural policy. An analysis of present trends suggest that about two-thirds of the land sold each year is bought by operating farmers and consolidated into existing farm units. This is the primary source of increasing concentration in the farm sector. If the farms that are normally healthy but temporarily in trouble were allowed to go out of business, it would not be unreasonable to assume that some of them will be consolidated into other existing units. Therefore, assuring that such farms obtain funds needed to stay viable would be consistent with the goals of efficiency, preserving a pluralistic agriculture for resiliency and future flexibility, providing economic opportunity for more people, and ultimate food security.



As discussed earlier, there are some offsetting structural consequences arising from the shifting of certain kinds and degrees of risk to the public sector. This problem could be minimized by reducing the subsidy as much as possible, thus reducing the attractiveness of the emergency credit as simply a source of cheap funds.

If, instead of a moderate-sized family farm, the farm in temporary trouble were very large, it is not clear that the same arguments for public credit assistance hold. If the farm were much larger than necessary for achieving efficiencies, and if the odds favored some or all of the land being sold in smaller tracts to new farmers or moderate-sized existing farmers, then there would be no particular public interest in "saving" the larger farm.

Also as discussed earlier, the availability of FmHA emergency loans represents a shifting of risks—from farmers to the public. Because of the subsidies involved in the program, there are undesirable structural consequences. If there were no subsidies involved, economic theory holds, the reduced uncertainty resulting from the availability of emergency loans could actually lead to more efficient use of resources.

Consequently, an actuarially sound emergency insurance program, or an emergency loan program with a premium charged above market interest rates to compensate for the additional risk and costs, would achieve the emergency-protection objective without the structural distortions caused by subsidies.

*In summary*, the criteria developed in the light of research on probable financial conditions and credit needs of farmers, as well as new research on the consequences of past credit policies, especially subsidized credit, suggest that the future health, diversity and resiliency of production agriculture would be best served if FmHA's farm lending activities were focused on those borrowers who:

- Truly cannot obtain credit elsewhere,
- Have small and moderate-sized farms with limited financial and farming resources or are temporarily in trouble because of economic or natural disasters, and
- Seek to finance sound activities with a reasonable expectation of eventual graduation to private credit.

## Characteristics of FmHA Borrowers

Who is now served by FmHA's farmer-loan programs?

A recent study of these borrowers suggests that, in 1979, the farm-operating and farm-ownership loans were heavily directed toward younger farmers and those with small net worths and low incomes. More than 68 percent of the money loaned in the farm-ownership program that year went to farmers with less than \$12,000 in net cash income and less than \$120,000 in net worth. Over 74 percent of the farm-operating loan money went to farmers in the same category. In the same year, 50 percent of the money loaned in each of these programs went to persons under the age of 30. (Table 29)

However, the economic-emergency loans were distributed a bit differently. These borrowers tended to have low incomes (presumably, that is what put them in an "emergency" situation) but more than one-third of the money loaned in 1979 went to farmers with more than \$500,000 in assets. Farms with gross sales of over \$40,000 represent one-fifth of all farms but received over two-thirds of the money loaned under the emergency program in 1979.

The data suggest that FmHA's farm-operating and farm-ownership loan programs basically serve the smaller farms. The data do not reveal the complete economic conditions of the borrowers, how they have changed over time, or how the loans affected the organization, management, and efficiency of the borrowers' farms. There are also no data on the characteristics of those refused credit by FmHA.

## Implications for Future FmHA Farm-Lending Priorities

The preceding analysis suggests that Farmers Home has a legitimate role consistent with the goals of an efficient agriculture and slowing trends toward concentration of economic power in the farm sector. Adjustments in the direction of that role would require:

- Substantial redirection of staff toward providing supervised credit to limited-resource farms, including coordinating their assistance with other agricultural experts and agencies around them.
- Shifting more credit to loan guarantees and eliminating interest-rate subsidies wherever possible. This would free staff to work with limited-resource farms, reduce inflationary pressures on land prices and reduce over-use of artificially cheap capital.
- Providing no funds for farms larger than the size necessary to be reasonably efficient, a category that probably includes most farms with sales over \$100,000 (in 1980 prices). Economic analyses reveal neither gains in economic efficiency to farmers nor lower food costs for consumers from making subsidized loans to the larger farms.



**Table 29: Percent of program money loaned to various net worth-net farm income categories of FmHA Borrowers, by farmer program, 1979**

Program/Income	Net Worth		Total
	Less than \$120,000	More than \$120,000	
	(Percent)		
Operating loans			
Less than \$12,000	74.4	4.3	78.7
More than \$12,000	17.5	4.0	21.5
Total	91.9	8.3	100.2*
Farm Ownership			
Less than \$12,000	68.1	4.9	73.0
More than \$12,000	19.7	6.5	26.2
Total	87.8	11.4	99.2*
Soil and Water			
Less than \$12,000	38.1	15.2	53.3
More than \$12,000	19.9	26.1	46.5
Total	58.0	41.8	99.8*
Economic Emergency			
Less than \$12,000	29.6	22.1	51.7
More than \$12,000	20.4	27.6	48.0
Total	50.0	49.7	99.7*
Program/Income	Net Worth		Total
	Less than \$300,000	More than \$300,000	
	(Percent)		
Operating loans			
Less than \$22,000	89.7	.6	90.3
More than \$22,000	9.6	.3	9.9
Total	99.3	.9	100.2*
Farm Ownership			
Less than \$22,000	86.5	.7	87.2
More than \$22,000	11.7	.4	12.1
Total	98.2	1.1	99.3*
Soil and Water			
Less than \$22,000	65.1	5.4	70.5
More than \$22,000	21.3	7.7	29.0
Total	86.4	13.1	99.5*
Economic Emergency			
Less than \$22,000	57.0	10.4	67.4
More than \$22,000	22.0	10.3	32.3
Total	79.0	20.7	99.7*

\*Totals may not equal 100 percent due to rounding.

- Elimination of subsidized emergency credit. There could be enhancement of economic efficiency if uncertainty related to natural and economic emergencies were reduced. That reduced uncertainty could be provided by actuarially sound emergency insurance or unsubsidized loans; that would reduce the undesirable structural consequences of such emergency programs.
- Limiting credit for beginning farmers to those seeking to finance operations no larger than necessary to be viable and efficient, and instituting a rigorous program of graduation to the private market for these loans.
- Improving the rigor and credibility of procedures for verifying that potential borrowers could not obtain credit elsewhere.

### **Summary: Credit Policies and the Structure of Agriculture**

In general, the private money markets and institutions (including the Farm Credit System Banks) serve agriculture well. Studies conducted and reviewed as a part of this project indicated, however, that the "tilt" is perhaps toward providing more credit funds to agriculture than a purely and perfectly competitive market would suggest. This might contribute to wasted resources, inflation in land values, and further concentration of production and land-ownership in agriculture into fewer hands.

Some other imperfections in private money markets include the problems of small banks in getting competitive access to funds and limits on loan size. This reduces the funds available to farmers where alternative lenders are not available and reduces the viability of small banks as lenders to agriculture. It also contributes to a decline in the role of small independent banks as community institutions and detracts from the viability of rural communities and small towns.

Public lending programs imply an element of subsidy and thus sharing the risk between farmers and the general public. An implication for structure is that farmers tend to behave as though risk were reduced or even removed, make less-efficient use of resources in the short run, and bid up values of land and other assets. The inflation in land prices makes land an attractive investment, leading to further bidding up of land prices. This attracts exploitation of the tax laws to shift current income, taxable at high rates, into the category of capital gains, taxed at a lower rate. High land values, compared to current income flows from that land, mean that only those having other income, including existing farmers with excess incomes, can afford the amortization costs of newly purchased land. Thus, efforts to shift risks via subsidized credit have adverse structural impacts on the farming sector.

Examination of the type of borrowers who would not be served by private credit markets suggest that some with limited resources have potential for being efficient and viable and that assisting them over temporary adverse conditions could possibly contribute to longer-term efficiency and strength in the farm sector. Assistance to others must be justified on the basis of achieving other societal goals or minimizing long-term social cost. There appears to be little economic rationale for providing public credit to farms larger than the minimum sizes needed for reasonable efficiency. The subsidies could be better spent helping small farmers, minorities and others increase their stake in society by gaining access to the land.

Public credit policies which appear to be consistent with the several goals of food and agricultural policy include:

- Assuring that agriculture has competitive access to private capital markets at competitive rates. This includes, on the supply side, assuring that financial rules and regulations are such that agriculture has a fair access to the markets, and on the demand side, assuring that economic conditions and institutions in agriculture do not reduce agriculture's ability to compete in the capital markets.
- Augmenting the workings of private markets to provide direct loans, insured loans and guaranteed loans either to those who would not otherwise be able to compete for funds but, if funded, would contribute to achieving the goals of agricultural policy or to situations whereby ultimate social costs would be minimized through the use of such funds.
- Reducing the growing dependence of farmers on emergency credit. Efficiency and structural goals would be better served by shifting farmers to an actuarially sound disaster-insurance program.
- Refocusing the programs and priorities of the Farmers Home Administration more toward those in agriculture who meet credible tests of need and who, if helped, can expect to ultimately contribute to improved performance of the farm sector.

## Footnotes

1. The Federal Land Banks (one for each Farm Credit System District plus local offices) were first established in 1916 to provide farmers with funds to purchase land and to permit them to borrow against the value of their real estate for other purposes. The Federal Land Banks (FLB's) are now the dominant real-estate lenders in agriculture. In the 1920's, the Federal Intermediate Credit Banks (FICB's) were chartered to channel loan funds from central money markets to local Production Credit Associations (PCA's) which, in turn, provide short-term and intermediate-term production loans to farmers. The Banks for Cooperatives (BC's) completed the Farm Credit System and were set up to finance farmers' cooperatives. The FCS banks were initially funded with Federal funds, but those funds have long since been repaid. The banks now operate much like private lenders and credit unions, except that they have unlimited access to funds and serve only producers and their cooperatives.
2. Hughes, Dean W., Stephen Gabriel, et. al., *Financing the Farm Sector in the 1980's: Aggregate Needs and the Roles of Public and Private Institutions*, draft report prepared for the Structure of Agriculture Project, Office of the Secretary, U.S. Department of Agriculture, Washington, D.C., December 1980.
3. The Small Business Administration, an independent Federal agency, is designed to provide credit to small businesses unable to obtain credit in the private sector. It has authority to provide direct and guaranteed loans to farm firms with gross annual receipts under \$1 million. The loans generally contain a subsidy either in the form of below-market interest rates or in lenient terms of repayment. SBA's role has been and will likely continue to be relatively small as an agricultural lender. On January 1, 1981, SBA is expected to hold about 1 percent of total farm debt outstanding. In addition, the Congress recently imposed a requirement that farmers attempt to obtain an FmHA emergency-disaster loan before applying for an SBA disaster loan, the SBA program which accounts for most of its loans to farmers.
4. The lending activity of the CCC is important but is secondary to the objectives of the stabilization programs. That probably should continue to be the case so as to not compromise the flexibility needed to achieve fundamental program objectives. Nevertheless, for farmers who use the loan and reserve programs, the nonrecourse loans are an important source of funding. The CCC also provides loan funds for farm commodity storage and drying facilities. CCC had \$4.5 billion in outstanding debt with farmers on January 1, 1980, accounting for 3 percent of all farm debt. CCC debt for the most part substitutes for debt by other lenders (as opposed to FmHA loans, which are supposed to supplement private lending to farmers).

## Selected References

- Boehlje, Michael, Stephen Gabriel and John E. Lee, Jr. "Public Policy Toward Agriculture Credit." Paper presented at a Symposium on Future Sources of Loanable Funds for Agricultural Banks, Kansas City, Mo. December 1980.
- Hughes, Dean W. "An Overview of Farm Sector Capital and Credit Needs in the Eighties." *Agricultural Finance Review*. Forthcoming.
- Hughes, Dean W., Stephen Gabriel, Michael Boehlje, David Reinders and George Amols. *National Agricultural Credit Study; Financing the Farm Sector in the 1980's: Aggregate Needs and the Roles of Public and Private Institutions*. Economics and Statistics Service, United States Department of Agriculture, Washington D.C. Forthcoming.
- Lee, John E. and Dean W. Hughes. "Capital Needs in Agriculture in the 1980's." Paper presented at Conference on Financing Agriculture in the 1980's, Minneapolis. September 1980.
- Lins, David and Peter J. Barry. "Availability of Financial Credit as a Factor of Structural Change in the U.S. Farm Production Sector." Committee Print. Committee on Agriculture, Nutrition and Forestry, United States Senate. April 1980.





## CHAPTER 9 PUBLIC RESEARCH AND EXTENSION POLICY



Technological change is a pervasive and persistent theme in the evolving structure of agriculture. The development and adoption of new technology can and does have a revolutionary effect on the economy and society, radically altering expectations, relationships, values, and lifestyles.

Technological change is almost never neutral. It frequently provides an advantage to those who seek or can readily adapt to change; at the same time, it usually puts some at a disadvantage, those who did not or could not readily adapt to change.

It is clear from even a cursory review of the history of U.S. agriculture that the development and application of new technology has significantly affected the structure of farming. Before 1925, for example, increases in agricultural production were largely a function of an increasing total amount of acreage used. Then came advances in technology and risk-reducing farm policies encouraged rapid adoption of that new technology. These changes greatly increased the production capacity of agriculture on a given land base.

The new technology was oriented to relatively inexpensive chemicals, petroleum and capital. A major effect was that it sharply reduced the labor requirements of farming. Later, when surpluses became burdensome, trying to curtail production by focusing on acreage, while technological development continued, was often a frustrated effort.

The extent to which new technology generated, made possible, or simply reinforced structural changes initiated by other factors is discussed in other parts of this report. This chapter focuses on what we have learned about ways structural change is affected by technology and considerations relevant to the future research agenda, in the context of public policy for agriculture.

### **Public Research and Extension As Sources of New Technology**

New technology most often is the result of new understanding, new knowledge that offers up different ways of doing things. Scientific and technological change are looked to by society to improve life for all.

The cooperative system of agricultural research and extension of that research into practical fields of application, as carried out by the Department of Agriculture and the land-grant colleges, is one of the oldest farm-related activities of the Government. It was founded on the belief that the application of scientific methods to the problems of agriculture would enhance the welfare of rural Americans and improve the food supply for all citizens.

Viewing new technology as a major influence in structural change, and public research and extension as a major source of new technology, two sets of interrelated questions emerge as fundamental to the structure of agriculture:

- What problem areas and clientele interests are to be addressed by agricultural research and extension? What priorities are to be placed on them in order to best serve the long-term goals the public as a whole establishes for food and agriculture?
- How can our agricultural research and extension activities best be organized, coordinated, and funded in order to address effectively and efficiently this agenda of critical problems and needs?

The issues are many and complex. They reflect an increasing awareness of the impacts, both beneficial and adverse, of technology. They also reflect the demands of an increasingly pluralistic clientele (including farm laborers, consumers, small and limited-resource farmers, environmentalists, and nonfarm rural residents) that their interests be given greater attention in agricultural research, teaching, and extension programs.

Those concerns and their implications for research, extension, and the structure of agriculture are noted below in terms of some of the major problem areas.

### **Rising World Demand**

The economic environment detailed in Part I suggests that even with significant increases in productivity in regions of the world not now self-sufficient, demand for U.S. exports is expected to continue to rise rapidly. The manner in which the United States meets some or all of this demand will importantly affect the structure of American and possibly global agriculture. With science and technology undoubtedly playing a major role in meeting this demand, research and education may now be more important than ever. But the research and educational institutions face new constraints and considerations that appeared less important in the past.

First, rising costs of productive inputs mean that continuing to develop technologies built on intensive use of energy, petroleum-based chemicals, and capital will become increasingly unattractive economically. These are also the technologies which have contributed most to farm specialization and concentration and to environmental degradation.

At the same time, with most of the good land now in production, we have lost the flexibility we once had to shift to more land-extensive technologies in lieu of the capital- and energy-intensive technologies. Moreover, the past emphasis on labor-saving technology may be less appropriate, as other resources become scarcer and more expensive relative to labor.



These developments imply that major shifts are needed in publicly supported research to develop farm production technologies that are more energy- and capital-efficient, more compatible with the environmental stress of a fully used land base, and more beneficial to farms of all sizes.

Increasing U.S. farm productivity through technology and practices that are less energy- and chemical-intensive will also reduce pressure on limited global production resources and reduce domestic vulnerability to rising energy costs and disruptions in supply. And, these objectives would be furthered by research and extension efforts to address technologies appropriate to the resources and needs of those not now self-sufficient in food production.

### Agricultural Production Capacity and Efficiency

Our current capability to provide an expanding supply of agricultural products is attributed to the development and use of cost-reducing or production-enhancing technology and the expanded use of readily available cropland.

The most common cost-reducing, efficiency-increasing technologies have been geared in large part to the substitution of cheaper inputs (petrochemicals and energy, capital, *et cetera*) for more scarce or relatively more expensive inputs (labor, for example). A result has been a contribution to both the increasing concentration of farm production on fewer and larger farms and the displacement of farm labor.

The movement of labor and other resources from farming to the production of other goods and services has contributed to national economic growth and development. But significant social costs also resulted—some displaced people had difficulty finding new work, and rural communities suffered from declining population before adapting to the changes in the local, regional, and national economy. Some of these problems continue, although declines in the agricultural labor force slowed dramatically in the past decade, and use of labor in farm production appears to be stable now.

Expansion of farm size has been an important aspect of the past gains in production efficiency. Economies of size, fostered in part by the development of new size-biased technology (for example, the development of large machinery and other capital-intensive tools and practices) have allowed farmers to reduce unit production costs by expanding farm size. Other research has removed some of the biological, technical, and managerial constraints on large-scale, specialized production. For example, the development of improved poultry disease-control techniques helped remove a significant barrier to large-scale production of broilers and turkeys.

In addition, innovative and adequately financed medium- to large-sized farmers have readily taken advantage of new technology (such as new seed varieties) and extension information that was necessarily size-biased. This increased their competitive advantages and contributed to their growth, at the expense of smaller or less innovative producers.

Research and extension programs have been generally targeted towards these larger-scale, innovative producers, reasoning that the demonstrated benefits would trickle down to the smaller farmers. This strategy lies behind much of the successful contribution to technological and productivity advancement for which research and extension programs have been widely praised. But it also lies behind the corresponding lack of attention to other social and technical problems for which they have been increasingly criticized.

This strategy now needs to be reexamined in the light of current and prospective conditions. Many farms are now so large that further expansion in size may yield little benefit in improved efficiency (reduced unit production costs), or add little to an individual producer's net income. Additionally, continued concentration of production capacity may inhibit the flexibility needed to respond to changing needs and situations.

Reassessment of research and education programs is also necessary to respond to emerging resource pressures. This includes assessment of the technological adjustments required to reduce production costs and reduce dependence on scarce nonrenewable resources, reassessment of the full consequences and potential payoffs from relatively greater attention to the needs of smaller farms, and a willingness to explore the long-run potential for unconventional production practices. All of these potential adjustments have clear structural implications.

### Natural Resources and Environmental Concerns

Closely related to maintaining our production capacity and efficiency is the growing recognition of the constraints on natural resources as production inputs and the quality of the environment.

Natural-resource and environmental problems have become increasingly important as increased demands for food and fiber production have coupled with growing, competing demands for other uses of water, forests, and other natural resources to intensify total demand on the resources and the environment. Excessive erosion of soil from fragile lands pressed into intensive production, dwindling water supplies in some regions, water pollution, and other environmental and health hazards from past and current production practices have become increasingly evident.

Environmental problems, concerns about the safety and quality of our food supply, and related issues have increased the public demand for regulation. Today, inadequate knowledge of environmental and health hazards and of the impacts of pesticides, food additives, and other production and processing practices restrict and complicate Government's ability to guarantee public health and safety. Continuing failure to find technological and educational solutions to these problems will almost certainly increase demand for added regulation.

The aspects of those concerns on which research and extension focus and the manner in which they are treated can have significant impact on the structure of agriculture. For example, concentration on the problems of preserving natural-resource inputs (for example, development of new soil-conserving production practices) might affect farm size and machinery design. Furthermore, development and wide adoption of economical conservation practices by farmers would lessen the need for public assistance or regulatory programs to deal with soil erosion and related programs.

Conversely, concentration on problems of maintaining current or increased levels and current types of inputs might eventually lead to increases in resource costs, affecting current and future production capacity. For example, significant shifts in regional production patterns will be likely unless major advances in water-conservation practices are developed and implemented in areas with limited water supplies, increasing competition for water use, and rising energy costs for pumping irrigation water.

#### Marketing, Processing, Distribution, and Consumption of Agricultural Products

The off-farm segments of the food and agricultural system have grown in significance with increasing functional specialization and demands for marketing services. These trends, combined with substantial supply cost increases (for labor, energy, *et cetera*) have resulted in the processing-and-distribution sector's accounting for a substantially larger portion of the consumer food dollar than the farm sector does. Food and fiber prices are thus increasingly dependent on improved productivity and efficiency in the nonfarm sector.

---

*"It is amazing how much can be accomplished in a controversial area if one does not acknowledge what he is doing!"*

*"But evidence has come before us that the land-grant college system, whatever its intent, whether real or professed or both, has served to speed the trend toward an industrialized agriculture. It simply has not been possible to make such great advances in efficiency as have occurred without having profound effect on the structure of agriculture. . . . The Extension Service, with its advice that a farmer should have a business 'big enough to be efficient,' undoubtedly speeded up the process of farm consolidation and reduced the number of farms. In the classroom, emphasis on modern management helped put the traditional family farm into a state of total eclipse."*

**Don Paarlberg, "The Land Grant Colleges and the Structure Issue," May 23, 1980, draft.**

---

Increasing economic concentration in marketing, processing and distribution industries—facilitated by new technology—raises concerns about the adverse effects of monopolistic power on both consumers and producers. Further, many firms in these industries now have significant capacity and incentives to conduct the research, development, and innovation needed to address the most pressing inefficiencies. However, this may lead to further concentration as these firms gain further competitive advantages. The need is for technologies and systems that can reduce costs and improve efficiency, while contributing to the maintenance of fuller competition in the nonfarm agribusiness sector.

Technological advances have also increased concentration of economic activity and power in the marketing sector. Vertical integration and coordination and contract growing to meet processor or retailer specifications have significantly altered the organization of farm production in some commodities and regions and have reduced market outlets of small farms.

Changing technology and increased processing of raw food commodities are increasing concerns about the nutritional quality and safety of our food. For the most part, these concerns have not been dealt with by publicly funded research and extension programs as extensively as farm-production problems and concerns. However, changes in these areas have major significance for the structure and performance of the food and agriculture system, and an increasing proportion of the public is making it clear that exclusive emphasis on relatively low-cost delivery of *any* product, handled in *any* manner, is no longer acceptable.



### Addressing Long-term Pressures and Short-term Problems

The time horizons for research and extension planning and funding potentially affect the structure of agriculture as much as the substance of the research.

Generally, the more fundamental concerns of agricultural science, those with the most potential to alter the structure of agriculture, require years of work and long planning and funding horizons. Examples include nitrogen-fixation research, which could alter producers' chemical use and dependency, and now-emerging germplasm techniques, which may revolutionize the food-production industry over time.

There are indications that, because of our emphasis on energy- and chemical-intensive practices while such resources are dwindling, we eventually must face fundamental readjustments in agriculture. These are problems that may require, in response, fundamentally different practices and technologies that can be achieved only by investment in *long-term* research.

At the same time as these demands exert increasing pressure on our capacity to produce and as production and distribution become increasingly specialized, the resulting vulnerability to short-term fluctuations in input prices, to the weather, and to other factors may generate increasingly serious *short-term* problems. These include significant fluctuations in the availability, quality and price of food, and in economic returns to producers, with attendant consequences in all directions.

The capability of the food and agricultural system to adjust rapidly and efficiently to changing conditions is a growing concern. This capability is partially determined by our ability and willingness to anticipate and confront changing conditions in the long term. Successful long-term basic research providing new breakthroughs will be of major importance, as will the responsiveness of the extension system in providing assistance and services to changing and varied clients.

A major problem for agricultural research and education is to develop appropriate planning for sustained efforts to meet long-term needs and to allocate resources sufficient to support those efforts, while retaining the flexibility to respond to urgent short-term problems. This will require more careful assessment of long-term priorities, anticipation of short-term problems, and better-coordinated determination of overall priorities.

Some of the emerging concerns about our food and agricultural system documented in this report can arguably be attributed to past inadequate assessments of longrun and system-wide implications of our research and extension policies. This points out the consequences of allowing policies to be set entirely on the basis of short-term, narrowly focused problems.

### Organization, Funding and Administration of Agricultural Science

Clearly, agricultural research and extension, by developing and disseminating new technology, have significant influence on the structure of agriculture. The questions of future relevance here are, how, by whom, and for what interests will decisions be made by publicly supported agricultural science institutions in determining how they will address the array of problems facing agriculture?

Because the influence of technology is so significant, it is important to examine and consider the organization and administration of the research and extension system.

Both the public and the private sectors conduct substantial food and agricultural research and education. Demarcation of appropriate or even expected responsibilities has not always been clear. However, there has been a traditional expectation that work for which the private sector lacks the capacity or incentive to adequately address, and which is in the public interest, is an appropriate focus of publicly funded work.

Agriculture has enjoyed close collaboration between the public and private science communities, which suggests that expansion or contraction of publicly funded work in some areas will affect private investment. The reverse should also be true. Public science planners need improved understanding of private sector science plans and investments to ensure the most efficient and effective use of *all* science funds and research capacity.

Federal in-house research programs and directed funding provide a centrally planned and coordinated means to address critical national needs. However, the food and agricultural sciences are so broad that such programs are by no means confined to USDA. Numerous oversight and review groups have pointed out that improvements are needed in the coordination, planning, and management of agricultural science programs at the Federal level. There is now no good way to be sure that centrally directed Federal programs avoid duplication and consistently give priority to national needs that other public or private institutions cannot or will not address. As one result, the Federal system lacks coordinated analysis of and planned influence on national agricultural structure.



The cooperative research and extension system for agriculture is unique in the United States. The Federal government provides continuing, largely undirected support to the land-grant colleges for research and extension activities. The system is organized as a cooperatively funded partnership. Because Federal funding has been almost totally undirected, the system has gradually evolved a highly decentralized planning and decision structure, which has allowed and encouraged research and extension workers to give highest priority to the immediate needs of local agricultural interests.

While this orientation toward local problem-solving has been one of the major reasons for past successes in addressing commercial food and agricultural problems, it has also been a factor in inhibiting the redirection of research and extension work toward longer-term, fundamental problems, and toward nontraditional problems or client groups. That is, as long as the local orientation dominates "cooperative" decisionmaking, there will be a tendency to emphasize research and extension that will reinforce current structure or structural trends.

No one could realistically argue for complete centralization of planning and decisionmaking in agricultural science. The potential for misdirection and inefficiency in such a system is readily apparent in international examples. However, a totally decentralized planning and decision system holds equivalent, if substantively different, potential problems.

The need is to improve planning and decisionmaking mechanisms so a more balanced approach, with more efficient and effective capacity to mobilize research and extension for the changing problems of the future, can be developed.

## The Future

At the very least, a major review of planning and decision-making practices in the realm of publicly supported agricultural science seems called for by the new realities we face.

Such a review should reconsider the logic of a cooperative system. "Cooperative" does not imply that it is necessary for all partners to hold identical aims—in fact, it assumes that they do not. The obvious variance in aims is clearly justified in the case of Federal, State, and local interests and needs. The tensions and complexities in such a mixed system make it difficult to reach consensual decisions on emphasis. The logic of a cooperative system suggests that, rather than being primarily (and sometimes wholly) locally oriented, decisions should be reached by open negotiation of the different interests and perspectives of all cooperating partners.

If the research and extension system is to consider current structural concerns and the longer-term structural consequences of what it does, new and more effective means of stating and negotiating the often disparate interests and objectives of the many legitimate constituencies of the food system are imperative.

## Selected References

- Baker, Gladys, *et. al.* *A History of the Agricultural Extension Service*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Lu, Yao-chi, Philip Cline and Leroy Quance. *Prospects for Productivity Growth in U.S. Agriculture*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 435. September 1979.
- National Agricultural Research and Extension Users Advisory Board. Report. United States Department of Agriculture, Washington, D.C. October 1980.
- O'Brien, Patrick. "World Agriculture in the 1980's." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- United States Department of Agriculture. *Changes in Farm Production and Efficiency, 1978*. Economics and Statistics Service, Washington, D.C. Statistical Bulletin 628. January 1980.

## CHAPTER 10 AGRICULTURAL LABOR





The history of hired agricultural labor presents one of the most notable cases of conflict between market performance and the expectations of its participants.

Labor is an important resource in agricultural production, the one that makes all the others work. Modern industrialized agriculture is increasingly looking to hired workers to meet its labor needs, yet the current farm-labor market structure and environment is not satisfactorily meeting the needs of farmworkers, employers, or the larger society.

For many of the nearly three million people employed by farmers, the farm-labor market frequently fails to provide stable employment opportunities with reasonable levels of earnings and the working conditions they seek.

By virtually any objective economic measure, farmworkers as an occupational group fall below minimally acceptable labor-force standards. The mechanisms for providing labor market information and the requisite skills to qualify workers for jobs on technologically advanced farms likewise are not performing satisfactorily.

At the same time, many farm employers are having difficulty hiring adequate numbers of sufficiently productive workers to produce competitively in domestic and world markets.

Hired labor is a critically important input to many farmers. While hired labor costs average only eight percent of farm production expenses across all farms, they comprise one-quarter to more than one-third of production expenses on vegetable, fruit, and horticultural specialty farms.

Many employers face an uncertain and unstable labor supply, low productivity, rising wage levels and an uneven regulatory environment. They, too, find labor-market information and skill-upgrading mechanisms unsatisfactory.

Society identifies much farmwork as socially undesirable and farmworkers as a severely economically disadvantaged group of laborers whose conditions, as individuals and as an occupational group, tend to be self-perpetuating. The public is concerned about lack of equity in farm-labor legislation and regulation, heavy reliance on foreign workers, the problems of migratory workers, and other social ills related to agricultural employment. At the same time, the public is also concerned about the health of the agricultural industry and the availability and cost of agricultural products. It is concerned that those who are able to work seek the available jobs before relying on public assistance.

As a result, for example, mechanization to replace labor has been publicly supported, but concerns have arisen over a lack of attention to improving manual methods or retraining workers in the new skills now needed. Also, some realize

that, even though agriculture now is recognized as a field requiring keen management skills, one of those skills—acquiring and managing labor—is seldom stressed when the others are imparted.

The Federal Government has mounted numerous programs to treat specific farm-labor problems. These attempts to assist have been largely ineffective in the past. They have most frequently been *ad hoc*, treating symptoms rather than causes. Many of these programs have contained reasonable components of an overall farm-labor strategy, but essential parts of such a strategy have been omitted.

### Farm Labor Use

Most of the Nation's farmwork is performed by farm families. However, the role of hired labor is becoming more important to the agricultural industry and to the Nation each year.

Even as the number of farms has decreased, the proportion of farmwork being performed by hired workers has been growing steadily. Advancing agricultural technology is increasingly dependent upon this work force's possessing sophisticated technical skills.

- Nearly three million people do hired farmwork some-time during the year.

There are nearly as many hired farmworkers as there are farm operators and unpaid members of their families who work on farms. Employment of hired agricultural workers currently is relatively stable. The long-term decline over previous decades apparently ended in the seventies; there is even some evidence of increasing employment in a few regions.

- One-third of U.S. farms hire workers; employment is concentrated on large farms and in certain regions and commodities.

Two percent of the Nation's largest farms incur more than one-third of the total hired-labor expense. However, many small farms also hire labor. One in five farms with gross sales of \$40,000 or less employ hired labor, and they comprise more than half of all farms hiring labor. California, Texas, and Florida together account for over one-third of all hired-labor expenditures in the United States. Those three and seven other States—Washington, North Carolina, New York, Illinois, Pennsylvania, Iowa, and Arkansas—account for more than half of national farm-labor expenditures.

Expenditures for hired and contract labor are almost equally divided among agronomic crop farms, horticultural (vegetable, fruit and nut farms, and nurseries) crop farms, and livestock and general farms.



## The Work Force

The hired farm work force encompasses a wide range of persons who vary greatly in their commitments to such work. Table 30 summarizes the salient characteristics of short-term seasonal, long-term seasonal, and year-round workers.

- Most hired farmworkers, like most farmers, do not depend on agriculture for their only income or employment.

About 60 percent of the hired farm work force are short-term seasonal workers who spend only a relatively brief time during the year working in an agricultural job. A majority of these workers are not in the labor force most of the year.

Another 25 percent of hired farmworkers are long-term seasonal workers who have a commitment to and dependence on agriculture. Nearly three-quarters of this group is in the labor force most of the year, and roughly two-thirds work exclusively in agriculture.

Finally, about 15 percent of hired farmworkers are employed all year in agriculture. Some of these workers piece together a sequence of seasonal jobs to obtain year-round work.

- Most hired farmworkers are young, local and white, but the hired farm work force is a very diverse group.

More than one-quarter of the hired farm work force is members of racial or ethnic minority groups; they tend to be long-term seasonal workers.

More than one-third are students; they are primarily in the short-term seasonal group.

More than three-quarters of all hired farmworkers are men or boys.

Slightly more than a third are heads of households or single. The rest are spouses or other family members.

Migrants comprise only about eight percent of the total farm work force. In absolute numbers, there are only about half as many as a decade ago. They are most heavily represented among the long-term seasonal workers. Although their numbers are small, they face unique problems not encountered by persons commuting daily to seasonal agricultural jobs from established homes.

Educational levels among farmworkers are low, but part of this is a result of the generally young age of this work force. Less than half of all farmworkers who are 25 years of age or older have completed high school, but more than half of all farmworkers are under 25 years of age.

The median age is about 23 years. Minority farmworkers tend to be significantly older as a group than do white workers. Because of increased seasonal employment on cash grain farms, especially in the Midwest, the trend in recent years is toward a younger and whiter hired agricultural work force.

A particularly high incidence of the Nation's working poor can be found among the men and women working for wages on farms. They rank second only to domestic household workers at the bottom of the national income scale.

Households headed by a farmworker average only about half the national mean income for all households having an employed head.

Various studies have suggested that farmworkers as an occupational group suffer abnormally high illness and accident rates and live in poorer quality housing than do other broad occupational categories.

Current national data are inadequate to provide policymakers with sufficient insight into or perspective on many important issues regarding agricultural labor. Many people who do farm work cannot be identified with agriculture in standard labor-force statistics, and the principal sources of specialized statistics may be seriously undercounting the farmworker population. Furthermore, national data obscure or "average out" many regional and commodity patterns.

Finally, it is likely that undocumented workers are largely omitted from the statistics, although they are surely a significant component of the Nation's farm work force and a recurring public-policy concern.

## Changing Work Relationships in Agriculture

The U.S. agricultural employment system is largely casual. There is an absence of commitment among employers and workers which would provide an assured work force of high quality, on the one hand, and adequate farmworker employment, livelihood, and living standards, on the other.

In recent years, however, changes have been taking place which are resulting in a reassessment of the traditional farm-labor management and market mechanisms.

**Table 30: Distribution of the hired farm work force: selected demographic and economic characteristics, by duration of farm work, 1977**

Selected characteristics	Short-term seasonal (74 days or less)	Long-term seasonal (75 – 249 days)	Permanent (250 days and over)
	(Percent)		
Race/ethnicity:			
White	77	62	69
Hispanic	8	16	12
Black	15	22	19
Sex:			
Male	71	82	93
Female	29	18	7
Age:			
Under 25	65	45	32
25–44	22	29	40
45–64	9	21	23
65 and older	4	5	5
Residence:			
Farm	17	27	45
Nonfarm	83	73	55
Migratory status:			
Nonmigratory	93	91	94
Migratory	7	9	6
Chief activity during the year:			
Hired farm work	3	55	87
Student	48	20	9
Keeping house	12	5	NA
Nonfarm work	23	9	NA
Other	14	11	4
Number of persons (000)	1,723	617	391
Average days of all paid work	93	183	317
Average annual earnings (\$) from all paid work	2,185	4,193	6,563

Source: ESS/USDA.

NA = Not available.

A more mechanized, capitalized and highly technical agriculture has resulted in requirements for skilled manpower which often cannot be met in the existing farm work force. Quite apart from the imperatives of mechanization, however, there has been increased pressure from workers and increased realization among employers of the necessity of reducing instability and improving efficiency and economic returns to the agricultural employment system. Impetus for change has also resulted from the application to agriculture of employment, safety, health, and other general labor-force regulatory standards.

One result of these changes has been to create an environment in which technical competence in managing labor is as essential as technical competence in managing the farm's financial and physical resources and purchased supplies.

In widely scattered parts of the United States, innovative persons and organizations in the agricultural community have been exploring new solutions to the increasing problems of providing agriculture's necessary manpower.

A small but apparently growing number of firms has been experimenting with the adaptation to agriculture of ideas and methods of modern industrial labor management—a particularly logical development on farms that are industrially organized, with functions such as ownership, management, labor, and basic decision-making shared among persons who are not necessarily family. This has involved recombining short-term jobs into longer employment sequences, the creation of job ladders, skill and managerial training, innovative remuneration and benefit packages, and employee-relations programs.

In general, the result has been improved earnings and productivity, which has helped employers to attract and retain better workers, and, in turn, has helped provide for employers a more stable and productive labor supply. While fewer workers were required, those jobs that remained were good jobs.

Labor-stabilization measures can only be applied so far, of course. While there is some evidence that both productivity and wages for peak seasonal labor can be improved, it is also obvious that the potential for converting seasonal agricultural jobs into long-term jobs has limits.

One of the major obstacles to more widespread adoption of progressive labor-management practices in agriculture is lack of knowledge. Few agricultural employers are even aware that options to the present casual labor market system exist. Even university graduates in farm management rarely encounter courses in labor management. There are few professional agricultural labor-management resources in the public or private sector that farmers can turn to for advice.

In a few locales, where educational programs in modern personnel management have been conducted and competent assistance has been available, farmers' responses have been enthusiastic and the resulting benefits to farmers and workers have been encouraging.

Another obstacle to more widespread adoption of progressive labor management is uneven enforcement of labor laws and regulations. In some cases, current economic trends are of themselves adequate incentives to adopt progressive personnel policies. But in others the presence and enforcement of labor laws are a critical additional incentive. Some employers have found that progressive labor-management practices are competitive only when there is equitable and consistent regulatory enforcement across all jurisdictions.

At the present time, farm employers in many locales and commodities face choices between labor-management systems that stress large crews of very transient workers or a reorganization of their own operations to accommodate labor-management systems stressing more stable and permanent employment patterns. The first approach results in a continued demand for large numbers of low-skilled, low-earning seasonally employed workers. The second will likely result in a reduced number of people doing agricultural work and demands for higher skills among those that remain, but it provides potential for more stable employment and higher earnings.

### **A Future Strategy**

Programs to provide training in higher skills and good jobs to intermittently employed workers are in direct conflict with the labor-market strategies of agricultural employers who depend on such low-skilled workers now. However, the unskilled labor pool has not been a good source of the quality labor that agricultural employers increasingly need.

Agricultural employment policy must be devoted to mechanisms for making agricultural employment competitive with the other employment opportunities available to workers. It clearly cannot be based upon policies aimed at maintaining a labor force which is available only because it has no better alternatives.



Retaining workers in a more stable and competitive employment pattern requires upgrading the quality of the work they do. In addition to longer periods of employment and higher earnings, this requires better working conditions, professional and respectful relations between workers and employers, advancement opportunities within their chosen occupation, and the ability to enjoy health, housing, education, social status, and other benefits of community life on an equitable basis with others in the labor force.

Raising incomes of agricultural workers will require sustained productivity increases if it is not to result in increased production costs. Moving away from highly casual labor patterns toward more stable remunerative employment should provide incentive to employers and workers to make investments in acquiring skills that should itself enhance productivity. More systematic labor management and progressive labor relations should have the same effect.

However, it is likely that not all the added cost of making farm employment competitive with other work will be offset by improved labor productivity; some increases in agricultural products' prices will result. These same equity considerations have been faced in other industries, and it is an implicit principle of U.S. labor policy that substandard employment practices cannot be justified by lower product prices.

The questions and issues regarding the structure of agricultural labor in the United States, as this summary review clearly indicates, are thorny and complex. The immediate question before the Department of Agriculture is less how to resolve them all than it is, simply, *how to get started* on them in some significant way.

A necessary first step, and perhaps the single most important step, is for the USDA to establish a positive departmental policy to actively develop and protect workers in agriculture. This means, in effect, making the same commitment to developing the potential of human resources that the Department has made to developing the potential of the physical, financial, technological, and natural resources employed in agriculture.

In implementing an agricultural human-resources policy, the USDA should devote priority attention to the 15 percent of the hired farm work force who are year-round workers and the 25 percent of the work force who have a substantial commitment to and dependence on agriculture for their livelihood, but who are only seasonally employed.

Priority attention should also be given to those sectors of the agricultural industry requiring particularly large amounts of labor. In some of them, survival of the farm probably depends on being able to successfully meet their labor needs within competitive production-cost ranges.

The challenge is to make these industries more competitive in the labor market and the commodity market at the same time.

### **Selected References**

- Agricultural Labor in 1980: A Survey with Recommendations*. Report of the United States Department of Agriculture/United States Department of Labor Agricultural Employment Working Group. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. December 1980.
- Fritsch, Conrad F. *Occupational and Nonoccupational Fatalities on U.S. Farms*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 356. 1976.
- Rowe, Gene and Leslie Whitener Smith. *Households Eligible for a National Farmworker Program Under the Comprehensive Employment and Training Act of 1973*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 324. 1976.
- Rowe, Gene. *The Hired Farm Working Force of 1975*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 437. 1978.
- Smith, Leslie Whitener and Gene Rowe. *Food Stamp Participation of Hired Farmworker Families*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 403. 1978.
- Smith, Leslie Whitener and Gene Rowe. *Income of Farm Wagerworker Households in 1971*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 251. 1974.
- Smith, Leslie Whitener and Robert Coltrane. *Agricultural Labor Needs in the 1980's*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. 1980.
- Smith, Leslie Whitener. *Social and Economic Characteristics of Spanish-Origin Hired Farmworkers in 1973*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agricultural Economics Report 347. 1976.





The new equilibrium emerging in American agriculture, as described in Part I of this report, has serious, far-reaching implications both for the role trade plays in the farm sector and the role our farm sector plays in the world agricultural economy.

Many of our key trade policies and the complex of programs linking our agriculture to the rest of the world were developed in the 1950's and 1960's and suited to the needs of a farm sector facing excess capacity, the resulting surpluses at home, and a buyer's market abroad.

As our supplies of resources readily available to commit to food production become visibly limited and the world market shifts gradually toward a seller's market, our trade policies and programs will have to be recast to suit fundamentally different circumstances.

### Historical Perspective

The rationale underlying our existing international agricultural policies evolved immediately prior to and over the decade following the Second World War. The majority of the policies and programs designed and implemented early in the postwar period reflected Depression-era concern with excess production capacity and wartime experience with exports as a means of easing, at least temporarily, price-dampening surpluses that were, among other things, a burden on the Federal budget.

The surpluses were the most visible result of the imbalances in a farm sector with a far larger capacity to produce than required by domestic demand for its products—and with technological advances undermining even the best of intentions to restrict annual production.

Given the magnitude of the capacity problem, postwar policymakers concluded that producing food, feed, and fiber for commercial export—even for concessional or subsidized export under food-aid or export-credit programs—was as efficient a use of the resources as other uses competing for them. Moreover, producing for export would measurably benefit the Nation's balance of payments, farm income, and Federal budget.

A strong sense of this beneficial impact of agricultural exports underlay our postwar policy stance favoring liberalized world trade, particularly in grains and other products in abundant supply in the United States.

The international programs developed over the first 25 years of the postwar period included export promotion programs to foster long-term growth in exports; food aid; development assistance; commercial credit programs, and, for selected products such as wheat, export subsidy programs designed, at least in part, to help dispose of the immediate surpluses.

The positive effects of trade at that time far outweighed any adverse effects of tying the domestic market directly to the world market.

### Realigning Agricultural Trade Policies

The economic conditions outlined in Part I for the 1980's suggest that future trade policy and related program decisions will have to be made in a markedly different setting—one characterized by a distinct trend toward tightening supplies and complicated by increased year-to-year swings in production.

The role exports play in the farm sector and the cost of producing more for export, compared to other investments or uses for the resources, increased dramatically with the expansion of trade and the disappearance of excess capacity in the 1970's.

Should the supply and demand forces outlined earlier materialize—especially in light of political preferences for expanded trade to maintain incomes and reduce balance-of-payments deficits—trade will play an even more dominant role in agriculture. The costs involved in producing more for export will also increase.

Today, the United States is the dominant trader, supplying roughly one-half the volume of products moving on the world market and almost 10 percent of the rest of the world's consumption. Over the eighties, the U.S. share of world trade could rise to three-fifths, and our exports could constitute as much as 13 percent of the world's food consumption.

Exports in the volume likely in the 1980's will tend to have high additional costs—both for farmers, in producing and marketing the commodities, and in a broader social and economic sense, in raising food prices, intensifying the use of renewable and nonrenewable resources, and putting further stress on the environment. This further complicates the trade-policy reassessment needed in the eighties.

For the economic future that appears highly likely, there will be at least three key trade-policy areas which need reexamination. Policymakers will face the critical problems of:

- Fully integrating trade policy into domestic food and agricultural policy.
- Realigning our international policies and programs to maximize the return on our increased participation in what is likely to be an increasingly unstable world market.
- Meeting our expanding international food-aid, food-reserve, and development-assistance responsibilities.



### Integrating Policies

The challenge of consciously integrating our trade policies and broader food policies relates to the difficult task of rationalizing conflicting objectives for resource use and conservation, for food-price stability, and for curtailing inflation, as well as such subsidiary national economic purposes as improving our balance of payments.

Until now, temporary shifts in demand from overseas, due to weather-related developments or changes in others' domestic policies, and fluctuations in production in the United States forced policymakers to decide priorities among what proved to be temporarily competing trade-policy and domestic agricultural-policy goals.

These decisions involved temporary trade-offs between foreign and domestic consumers without change in a seemingly permanent commitment to maximizing exports.

The new equilibrium in resources, compared to demand for commodities, will necessitate a fundamental re-evaluation, as the 1980's progress, of the level of exports that is good for the economy as a whole—for the immediate future and the rate of growth advisable over the longer run.

### Maximum Returns from Expanded Exports

The question of maximizing returns on our increased participation in the world market involves our basic trade-policy stance and the day-to-day administration of trade programs.

Do we continue to function largely as free traders, in a largely protectionist world market, and allow foreign consumers open access to our supplies? Or do we weaken, or possibly break, the links between the domestic market and the increasingly unstable world market? Do we modify export-marketing strategies, possibly in favor of bilateral trade arrangements or some form of export-marketing boards, to ensure that the return on export sales covers the full cost of producing and marketing agricultural products?

While export-promotion programs may appear initially to be superfluous in the 1980's, their role might well expand if they were to be focused on promoting products that minimize pressure on our resource base and food-price inflation but maximize the value added to the product and the benefits for the farm sector and the general economy.

### International Responsibilities

The third area of concern centers on meeting our international responsibilities. These relate first and foremost to our food-aid commitment to low-income countries, a commitment to ameliorating hunger in the world.

The food-aid programs of the last three decades served as an outlet for surplus production, as a market-development tool, and as a vehicle for aiding developing countries. The wide fluctuations in aid flows over the postwar period to date reflect changing emphases among these three separate goals and/or ability to commit resources toward their achievement in a given year.

Over the 1980's, the need for surplus disposal and market development is likely to decrease significantly; the cost of food aid is likely to increase substantially.

The production, population, and income trends noted at the beginning of this report suggest, however, that food-aid *needs* overseas will increase substantially.

Consequently, as the poorer countries' food needs grow—possibly at a record rate—the United States is likely to once again face difficult decisions on the basis of available supplies—honoring the commitment to meet those increasing needs for aid at a time when commercial demand is high, too.

Closely related to the question of food-aid responsibilities is the issue of food reserves. If year-to-year variations in world production increase and global productive capacity is used closer to its maximum than in the 1970's, the need for reserves will prove even greater than during that turbulent decade.

As the United States becomes both the world's major and residual food supplier, its vested interest in a reserve system will increase substantially—both as a means of meeting commercial and concessional trade commitments and of insulating the domestic market from imported instability.

Common to both the food-aid and reserves issues is the United States' vested interest in—and its strong position to insist on—a more equitable sharing among nations of the costs and benefits of world trade.

Finally comes the question of development assistance to low-income countries, so that their ability to meet their own food needs is strengthened in the decade. Food needs, particularly in these countries, are expected to grow at a rate beyond that which can be supplied by trade, even if that were desirable. The United States must continue and accelerate its commitment to assist these countries and to look for ways to increase the effectiveness of that assistance.

### PART III CONCLUSIONS AND RECOMMENDATIONS





Throughout this report, we have discussed the contemporary problems and issues of our agricultural and food system. We have attempted to illuminate those issues by presenting and discussing what we have learned over the course of the Structure Project. Parts I and II of this report were largely developed from the work and technical expertise of the Department's Economics and Statistics Service and several consultants. However, any judgments and policy recommendations made on the basis of that work in this report, and especially in this concluding chapter, are entirely the responsibility of Secretary Bergland, other policy officials, and the Structure Project staff.

### General Conclusions

One of the clear lessons of this study is that the many individual forces affecting structure cannot be fully understood and addressed without regard for their interactions with other forces. Tax, credit, commodity, and development policies, inflation, technology, and market forces, to name a few, all interact in a kind of economic chemistry. The structural products of that interaction vary in response to the many factors with which they interact, including type and size of farm, wealth of the individuals and firms, and general economic and agricultural conditions. We cannot expect to fully measure the singular impact of all these complex interactions. But policies that fail even to recognize that such interactions exist will, at best, be of limited effectiveness and, at worst, generate undesirable and perhaps irreversible inequities and structural changes.

Although we have been unable to precisely quantify the relative importance of the many policies and programs that have and continued to affect the structure of agriculture, the hearings and subsequent studies provide conclusions that can serve as the basis for informed judgments.

First, the present tax policies are having a significant effect on farm structure—on balance, they are biased toward the larger farmers and wealthy investors.

Second, technology—the product of past research and education—has had a major impact on structure.

Third, changes in the agricultural marketing system have affected structure. Increasingly, the marketing system is oriented to better serve the larger producers.

Fourth, farm commodity and credit policies have been of greater benefit to the larger producers, and this has affected structure.

Fifth, the policies, programs, and events that have created jobs for rural residents have had an impact on farm structure.

At the same time, it has become increasingly evident that the gains to the Nation that remain to be captured from the continued shift to larger and larger farming operations have become smaller over time. When the net losses to farming communities associated with the continual decline in the number of farm families are taken into account, we have passed the point where any net gain to society can be claimed from policies that encourage large farms to become larger.

Further, there is no overall reason for public policy to encourage farm growth and consolidation beyond the size necessary to be efficient. Beyond this size, society has no reason to encourage or subsidize growth, nothing to gain either in terms of efficiency or lower food costs, and little to gain in terms of ensuring adequate incomes for farmers.

As commodity prices increase in the future and land prices further accelerate in value, the market will undoubtedly stimulate growth on its own. Policies that explicitly or unintentionally encourage this tendency are both inflationary and an inefficient use of resources.

### General Recommendations

It seems fairly certain that the future economic climate, combined with a continuation of current policies and programs, will continue and even accelerate the shift to large and super-large farms. Therefore, unless present policies and programs are changed so that they counter, instead of reinforce and accelerate the trends towards ever-larger farming operations, the result will be a few large farms controlling food production in only a few years.

This does not mean that present policies and the programs derived from them should be summarily abandoned. It does mean that they should be modified. This study has shown the wide diversity in the impacts of present policies as well as the dangers associated with extreme volatility in the marketplace. The need for care in modifying policies is found, for example, in the vulnerability of a large proportion of today's primary farms to such volatility. That vulnerability underscores the importance of modifications based on accurate interpretations of farmers' needs and of changes that lessen this vulnerability and promote flexibility.

Programs designed to protect today's farmers from the economic and natural disasters that remain as threats are justified and must be maintained. But they also must be tailored to these farmers' needs. Programs that seek to guarantee market prices or incomes in excess of those needed by fully efficient producers will only lead, again, to a Nation of large and super-large farms and further the demise of farming communities.



Consequently, policies and programs should be carefully modified, with farm structure clearly in mind, so that they no longer encourage economic cannibalism within agriculture or short-sighted exploitation of agricultural resources with no thought for their use over the longer term. They must recognize the costs to society that are the consequences of unnecessary concentration and be so modified that financial and technical assistance is made available to help those who, in its absence, will be adversely affected by economic forces and policies.

The resourcefulness, initiative, and foresight of the American farmer is legendary. These characteristics, however, evolved from a tradition of facing and coping with risks largely on one's own. An environment which not only discourages individual risk management, but also actively encourages its convenient transfer to the Government and general public, endangers that tradition.

Central to the necessary modifications are policies and programs that help the medium-sized and smaller farm operators obtain credit, achieve production efficiencies and marketing opportunities, protect their natural resources and the environment, have access to off-farm employment opportunities, and offset the bias towards bigness in tax policies.

These modifications are the only way in which food and agricultural policy can be conformed to the public interest clearly expressed in the goals and purposes outlined in the introduction to this report. Present policies and programs should be modified so that they promote opportunity within agriculture, provide access to its rewards, and an equitable distribution of those rewards and risks.

Finally, we submit that if a diverse farm sector is to be maintained, it is important that policies recognize problems peculiar to specific groups of farms and address those problems directly. The "broadside program" approach, perhaps more appropriate in the past, is doing more to concentrate production than it is to protect the farm sector.

### Specific Findings

Concurrent with the passing of the chronic excess production capacity is the disappearance of some fundamental problems of the farm sector—notably those problems that were most directly related to persistent surpluses. We found that incomes in agriculture are no longer pervasively or *chronically* depressed, nor markedly lower than incomes of nonfarm people. The emergence of industrial employment opportunities in rural areas has contributed significantly to greater incomes on the smaller farms, and to a major lessening of the disparity of incomes among farm people. In fact, most of the 1.2 million of the very smallest places counted as farms are rural residences whose occupants depend primarily on nonfarm jobs.

The improved income situation in agriculture is also partly due to improved earnings from farm businesses. Those farmers who own the land they farm have both current income and capital gains, and both have increased in real terms over the previous decade. Their returns are greatest from appreciation of capital assets, especially land. The rates of return from *real* capital gains (with inflation's effects removed) are fully comparable to earnings from investments in the rest of the economy. Rates of return from current income are still relatively moderate, although substantially above levels that have prevailed during most of the postwar period. When the returns from both sources are combined, earnings of farm investments seem fully comparable to investment earnings in the rest of our economy.

But, not all producers realize income benefits from appreciation in land values. Much of the land (about one-third) is owned by nonfarming landlords. Thus, much of the increased wealth resulting from higher land prices is not accruing to farmers but to individuals outside the farm sector. To the extent that farm-policy benefits intended for farmers get capitalized into higher land values and flow out of agriculture, the policies are inappropriate. Tenant farmers who rent land on a cash or share-rent basis may see only higher rents.

We also found a growing concentration throughout the entire food industry—a concentration that showed itself in several ways. Commodity production is highly concentrated. The benefits from the commodity programs, still disbursed by the volume of production on each farm, are similarly concentrated. Ownership of the resource most important to farming—the land—is vested in the hands of relatively few people. Agricultural input suppliers, the agricultural marketing system, food processing, distributing and retailing, are all increasingly concentrated.

The supply of land is limited, and its role in farming is unique. Simultaneously, it is a production input, a store of wealth, the ultimate repository of program benefits, and the biggest barrier to occupational entry. The concentration of landownership and the declining share controlled by farm operators are fundamental structural changes, and, therefore, are most serious.

Rapid appreciation in land prices is a central cause of continuing concentration of landownership into fewer hands. The fact that land prices have been rising faster than the general inflation rate has made land an attractive investment for farmers and nonfarmers alike. Those best able to exploit the benefits from investing in agricultural land are nonfarmers and wealthy farmers—those with sufficient supplemental income to enable repayment of principal and interest on purchase loans, since earnings from the land alone are insufficient. Further, appreciation in land prices encourages exploitation of tax provisions that permit current income to be taxed as capital gains. The taxes thus saved—greater for those who can afford to defer income—become a benefit to be used to outbid others for land. Thus, rapid increases in land prices inspire the wealthy to exploit the tax laws and outbid others for land. Farms become fewer and larger, and land prices rise in a continuing inflationary cycle.

Our studies also found vast changes in characteristics of farms that are not so readily apparent. One is their financial structure. Farms today are more specialized and capital-intensive than formerly; they are more dependent on industrial production inputs, and many are much more highly debt-leveraged than in times past. Annual cash obligations are a high proportion of gross receipts on all farms, and the proportion grows as the size of farm increases. These large annual cash-flow requirements heighten the vulnerability of farms to even mild production or market fluctuations. Thus, while agriculture may no longer be beset by a chronic low-income problem, it does face a severe problem of economic instability.

Furthermore, as part of the past program of technological development in agriculture, labor productivity has been a primary focus. This meant that each farmer had to try to outrun low prices by reducing costs and expanding the size of the farm to get more volume in an effort to get larger incomes. A result was the large capital-for-labor substitution, resulting in the capital-intensiveness of the sector today. But today the labor component of agricultural production—both the number of farmers and workers—is very small, and the productivity of the remaining labor is very high. Continuing a focus on labor displacement may thus actually be counterproductive. Smaller farms, for example, depend more on labor than on capital and can choose to successfully use organic farming practices if not undercut by program administration or a lack of appropriate technology.

Before turning to a more detailed discussion of the future economic climate and structural tendencies, and our recommendations for responding to them, it is useful to re-examine the subdivisions of today's farms into groups with common characteristics that are significant for policy purposes. We delineate four categories. This delineation is not perfect,

to be sure, and is not appropriate for all purposes, but it does provide a much clearer focus on just who and what we are dealing with in the farm sector today.

The four categories, shown in the accompanying table and Figure 8 with 1978 data, are: Rural Farm Residences, Small Farms, Medium-Sized Farms, and Large Farms.

The Rural Farm Residence category, although the largest, is seen to have small total production. Off-farm income accounts for most of the total income and is quite substantial on average. The major farm-related problem this group faces may be obtaining appropriate markets for the commodities it produces. At this volume, direct-marketing schemes and cooperative marketing may be most suitable.

The second group, the Small Farms, produces gross sales of \$5,000 to \$40,000 each. It is in this group where the *combination* of farm and nonfarm earnings is especially important. By the time farms reach \$40,000 in gross sales, net farm income is slightly over one-half of total income, and total income, on the average, approaches the national median. It is in this group where the remaining poverty is perhaps most concentrated. And, it is for this group that a combination of strategies becomes important: for example, nonfarm employment opportunities; marketing improvements, including cooperative ventures; technical assistance; access to credit; focused research and technology development, and new, innovative forms of commodity and farm programs.

The next group, the Medium-Sized Farms, includes those with annual gross sales between \$40,000 and \$200,000. There are undoubtedly some part-time farmers near the low end of the bracket, but, by and large, farming is the major source of income for these farm families. Our studies show that most of the technical economies are achieved at sizes well within this bracket. In fact, by the time gross sales reach the neighborhood of \$130,000, the technical economies have been fully obtained and most available market economies have probably been achieved as well.

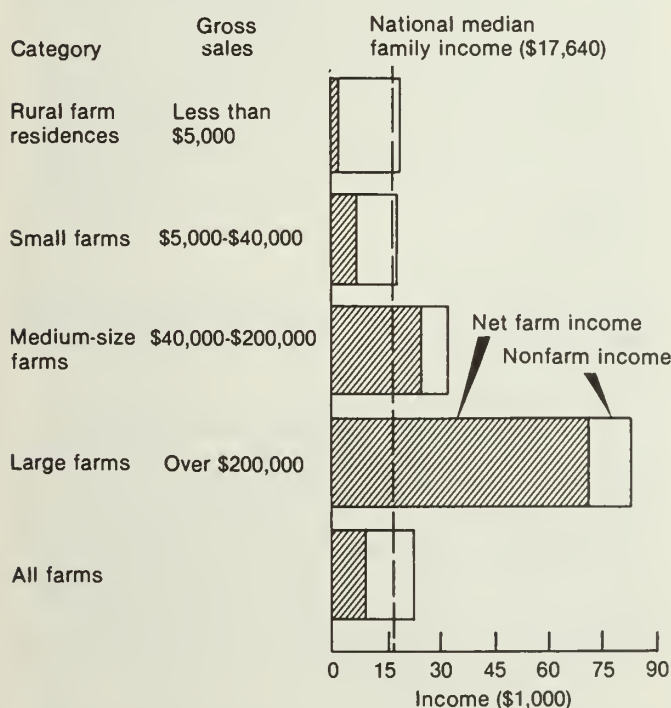
The fourth category contains the farms with more than \$200,000 in gross sales, the Large Farms. These farms undoubtedly have achieved all technical and virtually all market economies. Incomes per farm family are more than adequate by any standard, and the farm business generates a combined current-income and capital-gains return fully comparable to returns in the nonfarm economy. The farm families' labor is fully occupied. But, income stability—cash flow—is a primary concern.



Category	Gross sales	Farms		Gross Sales		Off-Farm Earnings	
		Number (000)	Percent	Amount (bil.\$)	Percent	Amount (bil.\$)	Percent
Rural farm residences	Under \$5,000	1,186	44.4	2.3	2.0	20.2	58.6
Small farms	\$5,000 – \$40,000	898	33.6	19.2	16.4	9.5	27.5
Medium-sized farms	\$40,000 – \$200,000	524	19.6	49.6	42.2	4.0	11.6
Large farms	Over \$200,000	64	2.4	46.3	39.4	0.8	2.3
Total		2,672	100.0	117.4	100.0	34.5	100.0

Figure 8

### Income per Farm Operator Family, By Farm Size, 1978



### Economic Stability

The period of the 1950's and 1960's, although one of low returns, was also one of relative economic stability in agriculture. There were few instances of severely disruptive price fluctuations. Those that did occur were slight and due largely to the deviations in the size of the domestic crop. This stability derived, in large part, as a side effect of the commodity and other programs that formed the "farm program" complex. These programs provided a price floor—the loan rate. Prices never fell significantly below this floor, and the large quantities of commodities that accumulated in Government storehouses through the loan program always overhung the market. Thus, commodity prices tended to remain very near the support price. Any shortfall in production could immediately be made up from the large stock, and market prices were precluded from rising significantly above the loan rate, effectively eliminating the opportunity for returns from farming to match those in other sectors of the economy.

The stability that was largely taken for granted during that period was abruptly shattered by the explosive events that began in 1972 with the first major Soviet grain purchases. Prices rose to disruptively high levels, subjecting the domestic livestock sector to a shock that adversely affected it through the balance of the decade. Farmers' gross receipts increased, while costs lagged for a time, and crop producers enjoyed atypical prosperity. But, subsequently, commodity prices returned to more normal levels, and inflation-induced costs soon caught up. Political pressure was thus generated for increased price and income supports.

Boom prices also sparked the rapid inflation in land prices that continued through the decade. Spiraling land prices increased renters' production costs, contributed to greater ownership and wealth concentration, and created an even greater need for more capital simply to finance the resource base, without adding to its productivity.



Rather persuasive arguments have emerged indicating that future economic conditions for agriculture could be fundamentally different from those to which we have become accustomed over the past 50 years. Many of the demographic, economic, weather, and political factors that caused the instability of the early 1970's are still at play and are likely to be exacerbated during the 1980's.

The growing global population and the rising affluence of many of the world's peoples are each year further narrowing the gap between food-production capacity and the current consumption requirement. That production-consumption balance, always precarious, is increasingly sensitive to small deviations in production and use. The world's growing dependence on marginally productive areas will translate into widening swings in production and demand for imports—swings that will have to be countered to an increasing extent by only a few countries, notably the United States.

When we examine the pace at which our food and agricultural production plant is presently operating, we find it already very near its *short-term* capacity. We find our resource and technology bases fully stretched. The once-excess labor is gone from agriculture, the program-created land reserve is no more, and our stockpiles of most commodities are at dangerously low levels. The thin margin between scarcity and surplus is more than ever a function of the weather, something over which we still have little control.

The continuation of an era in which growth in foreign food demand, on the average, will likely outpace growth in foreign food production should *not* be interpreted as a call to our farmers to plant "fence to fence." It is not. Rather, the situation calls for development of well-conceived methods of coping with a tightening world balance, so that we can anticipate problems rather than confronting them in an atmosphere of crisis, only after they are upon us. Proper planning will also allow attention to be given to many of the other relevant considerations which society deems to be important but which all too often get neglected in crisis policymaking.

Nor does the emergence of a close accord between the world's ability to produce food and the consumption requirement mean that all of the problems we have previously experienced in agriculture will never appear again. It is highly likely that we will face surplus periods—when production temporarily will outpace demand—due to successively favorable weather years. These will be times of downward pressure on commodity prices, and declines in farm income. But the fundamental difference from previous periods is that these will be *temporary*—rather than chronic—imbalances. As such, it is important that we now view them appropriately and deal with them differently.

Rather than immediately turning to production controls as stocks accumulate, we will need to devise appropriate methods for holding that temporary abundance for use in subsequent periods of shortage. It should not be forgotten that even one year of shortage and high prices can, if the response to it is inappropriate, disrupt the domestic livestock sector for several years. Quite simply, vacillation between short periods of comfortable supplies and discomfiting shortages will occur with increased frequency, and policy must be sufficiently flexible to accommodate this fact.

Recent projections suggest that the price volatility which could result from such vacillation between shortages and surpluses may be even greater than in the 1970's. This has several implications. Volatile commodity prices imply unstable farm income. For moderate-sized farms, incomes could fluctuate between adequate and inadequate. Large farms, especially those that are highly debt-leveraged and highly dependent on purchased inputs, are increasingly vulnerable to temporary dips in cash flows. Thus, the several farm categories have a vested interest in commodity programs which reduce price instability or which shift the risks associated with such instability. Volatile farm product prices mean unstable food prices, and all the associated ripple effects through the economy. Farmers, consumers, and taxpayers all lose.

How we address the problem of instability will be very important to the future structure of agriculture. Most past and some existing programs, designed to reduce or shift farmer's vulnerability to price instability, tended to exacerbate the forces causing concentration of production and higher prices. This is because those programs often contain subsidies which tend to disproportionately benefit larger farmers and landowners. The subsidies also make production activities appear more profitable than is really the case and, thus, promote misuse of production resources. In the future, programs designed to deal with instability should also be designed to minimize unnecessary subsidies and distortions in resource allocation.

Many nations have approached the problem of instability by insulating their domestic markets almost completely from fluctuations of world markets, through very high price thresholds and state trading organizations. Both of these approaches, however, are fundamentally inconsistent with our long-held policy of promoting freer trade globally and of having open, freely accessible markets responsive to demand. But, we, too, have a means consistent with our system for ensuring stability, and that is the farmer-owned grain reserve.

The important choice for the future is not whether we should maintain a reserve. Instead, it should be the scope of our reserve policy and the appropriate size of the various commodity reserves. While we must continue to encourage greater participation by other nations in a multinational reserve scheme, we cannot wait for such an eventuality. It is in our self-interest to proceed unilaterally. At a minimum, our reserve policy should be extended to the oilseeds. As the world's major oilseed supplier, the lack of a reserve policy makes both us and those who depend upon us increasingly vulnerable.

Determining the adequate size for the reserve cannot be done simply by gauging reserve stocks against historical stock levels. The size of the base—the greatly increased food requirements in absolute amounts—has grown so rapidly that reserve quantities considered enormous just a few years ago can now be depleted in a few months. The 1980 season clearly underscored this. In 1979, we harvested the largest feed grain crop in the history of this Nation. Reserves exceeded 31 million tons. Yet, in just one subsequent poor season—not a disaster, just a poor season—the reserves are being depleted and stocks are being drawn to dangerously low levels.

We must also improve our ability to successfully operate a reserve over a full cycle of accumulation and depletion. Periods of abundance present relatively few problems. The difficult part is operating a buffer stock reserve in times of frequent scarcity.

Additional attention is needed as well to establishing entry and release prices for the reserve that are equitable to producers and provide sufficient stability for domestic and foreign buyers. Reserve release and call prices are now based upon all farmers' average cost of production. While the limitations of cost of production as a standard in farm policy are well known to critics and proponents alike, no feasible alternative has yet emerged. Policy decisions must be made, however, while the search for an improved measure continues. Our studies show that the reserve is used most by those farmers with the largest volumes of commodities, those most able to afford investment in on-farm storage and handling facilities. It would thus seem appropriate to base the reserve indicator prices on the costs of the most typical users, the operators of fully efficient farming operations. Cost-of-production studies used to set those prices could be oriented to farmers with over \$100,000 in sales, rather than to all farmers producing the commodity, as at present. While the reserve would continue to be available to farmers of all sizes, the cost-based indicator prices would most nearly reflect the conditions of the vast majority of the users.

## Future Farm Structure

Decisions will be made this year and in the next few years which will shape the options available for generations to come and will importantly affect the quality of life of all citizens. These decisions will determine the structure and organization of our agriculture and the adequacy of our resource base to meet the future food needs of our citizens and people around the globe. More than anything, now is a time for serious thought—for giving consideration not only to our immediate needs, but to the needs of future generations of Americans.

We have to make choices between the maximization of current production and exports and long-run resource utilization and conservation. We have to make choices about how we will allocate our products between domestic consumers and foreign customers in years when there will simply not be enough for all. Perhaps the most critical of the far-reaching choices is to explicitly decide, what structure of agriculture do we want to attain and to perpetuate?

A future characterized by relatively tight commodity supplies and relatively high market prices for farm products, combined with a continuation of current policies and programs, means an acceleration in the shift towards larger farms. More specifically, it means:

- increasing concentration in the entire agricultural and food system;
- incomes of farmers comparing favorably with those in other occupations, and a higher rate of return to assets from current income;
- continued rapid gains in agricultural land prices, and even higher earnings after capital gains are taken into account;
- a higher proportion of part-owner farmers renting an increasing share of the land they farm;
- greater dependence on industrial production inputs, with cash expenses accounting for a higher proportion of gross receipts;
- greater pressure on our land and water resources;
- a continued rapid rise in credit use for the agricultural system;
- greater pressure for funds for research designed to increase agricultural productivity;
- greater pressure for tax provisions that are judged to be productivity-increasing;
- an increase in use of farm labor;
- increasing tension between domestic and foreign buyers of our agricultural products, and
- increasing difficulty in obtaining funds needed for food-assistance programs.



Those trends derive from the economic climate in which we find ourselves today. If they are allowed to continue untempered, this will become a nation of fewer and fewer farm operations of ever-increasing size. There is little or nothing to be gained from allowing these tendencies free rein, in terms of the society's expressed goals for the food and agricultural system. Indeed, allowing these trends free rein would instead produce, in many respects, results which are the opposite of those sought by our society.

Certain widely held objectives can be achieved as a result of this economic climate—income levels for farm operators comparable to those of others in the society, for example. Meeting other objectives—a flexible structure of agriculture and equity within the system, for example—will, however, require tempering the economic forces that exist.

Many of the choices to be made now and in the future involve issues treated in the preceding chapters—taxation, credit, land, commodity programs, resource conservation, farm labor, international trade, research and development and others. Specific recommendations in these areas follow.

## Land

There is perhaps no factor more crucial to the structure of the farm sector than the land. Among farmers, a major issue concerning landownership in recent years has been the estate tax. However, this is only one of the issues critical to a family-farm system of agriculture. Smooth intergenerational bequests of land are necessary to a structure of agriculture that centers on family farm operations. However, at least two other conditions must also be met if we are to have our agriculture organized primarily into family farm units and are to offer the opportunity of farming, and owning land, to persons other than the heirs of current farmers. Those are:

- A significant proportion of heirs not wishing to farm must find it economical to sell their inheritance to people outside of the family; and
- People not previously owning land, but interested in farming, must find it possible to buy the land and pay for it with earnings from that land.

Meeting these conditions has been made substantially more difficult by the rapid increases in land values, which markedly accelerated during the 1970's, and by the continued persistent inflation. As inflation persists, land becomes an increasingly attractive hedge, causing people, who might in other cases sell, to hold on to it, and causing other kinds of investors, normally not interested in farming, to buy farmland. Further complicating this are tax breaks, such as capital-gains treatment, special provisions for certain institutional investment plans, and other inducements for both farmer investors and nonfarm investors to purchase farmland.

It may not be possible, given our strong feelings about private ownership in the United States, the probable inflationary future, and the expected increased future earnings, to radically alter the trends toward greater separation of ownership and operation, increased concentration in ownership, or higher land prices. However, we should correct policies that accelerate rather than retard these trends.

At a minimum, we should:

- Conduct agricultural and food programs so that they do not aggravate inflation. The Government's role in risk management should be defined so as not to encourage people to incur large debt in anticipation that the Government will bail them out.
- Direct the benefits of farm-related programs to those who operate their farms, rather than to nonfarming owners of land. Current farm policy makes little or no distinction between working farmers and farmer investors when, for example, the benefits of the peanut and tobacco programs are tied to acreage allotments, or other programs' benefits are tied to inflexible normal crop acreages, rather than to the person who works the land. Perhaps some of this cannot be helped. But, as a principle behind our commodity, tax, and credit policies, we should try to direct the benefits to working farmers, and dropping such direct acreage connections would be a step in this direction. The farm sector does not need to have additional investment stimulated through special privileges to nonfarm investors—this only adds to inflation and puts working farmers in competition with wealthy investors.
- Facilitate intergenerational transfers of efficient-sized farms, but tax farmland death transfers *very* progressively, without exception, once the amount of land involved is larger than an efficient family-sized farm.
- Neutralize the tax code's impact on farmland as an investment. This would involve reexamination of special pension-fund provisions and other institutional arrangements and also investigating ways to limit capital-gains benefits.
- Use Farmers Home Administration credit to help young and limited-resource farmers who do not have adequate financial backing to purchase and operate farmland. Since the government shares the risk, perhaps it should share in the asset appreciation, too.

In general, we must systematically remove from our policies those incentives which encourage and even reward the acquisition and holding of farmland in quantities beyond that necessary for an efficient-sized production unit.



## Tax Policy

The Secretary and Department of Agriculture have little or no direct control over numerous policy areas which importantly affect farmers and farming. Because agriculture has become much more closely integrated into the national economy, this situation needs to be altered. Greater capability within the Department of Agriculture should be developed to address the impacts of decisions in these areas on farmers and other participants in the food economy, and institutional arrangements should be made for far greater USDA participation in the decisionmaking process. One such area of special importance is tax policy.

The impacts of tax policy on farms and the structure of farming have been little perceived and even less well understood. Our studies find that tax policy has significantly affected the structure, largely by reinforcing and supporting the consequences of other economic forces and policies.

Provisions affecting agriculture appear throughout the tax law. Many provide special treatment for farmers and were adopted at times when special treatment may have been justified. In most cases, this special treatment no longer seems warranted and, in some cases, may perform a disservice.

Many of our studies would suggest that the tax provisions give an advantage to large operations and that this advantage encourages consolidation of farms and growth in farm size. Thus, a general recommendation is that all tax provisions relating to farming should be carefully reexamined by the Departments of Treasury and Agriculture and the Congress for modifications, so that the tax advantages should only be provided up to the size of farm that permits most economies of size to be captured. This examination should develop appropriate legislative recommendations, focusing on the following specific areas:

- Reexamining special preferences in the estate tax law. These provisions were developed to limit the tax on a moderate-sized family farm by taxing them according to their value as production units. The intent was to allow efficient-sized units to be passed on to farmers' heirs who want to farm, but at the same time rigorously taxing estates larger than this size. These provisions have apparently not had the effect intended. This reexamination would focus on how these provisions should be modified to achieve their original purpose.

- Removing the allowance of capital gains on assets that have been developed, improved, or carried by deductible costs. Ways should be investigated to eliminate the impact on land and product prices of tax-motivated investments, perhaps by either requiring capitalization of their costs or treating their proceeds as ordinary income or both.

- Examining the elimination of the cash-accounting rules. Since the original justification for these rules has

largely disappeared, the benefits and problems arising from their elimination or from the imposition of further limits on their use should be addressed.

- Reexamining the investment tax credit. The effect of capital incentives should be carefully studied to ascertain whether they have had the desired effect of lowering capital costs and improving efficiency.

- Treating agriculture as a special industry. All of the special rules raise the question of whether agriculture presents economic or tax issues that should be resolved by unique tax treatment. If it does, its needs should be specified and dealt with in a way that provides incentives to ensure a future farm structure that best serves our society's goals.

## Commodity Policy

The expected economic climate within which the U.S. and world agricultural system will operate during the 1980's means the value of a reserves policy—national and international—will be much greater. It also means:

- Target prices (deficiency payments) are less likely to be needed to prevent economic disaster.

- Cropland set-aside and diversion authorities are much less likely to be needed.

- A comprehensive all-risk crop insurance program will be of even greater importance.

- Greater attention will have to be given to protecting the basic productive capacity of our soil and to conserving our water.

Our specific recommendations are:

- Reserve policies should be maintained for grains and extended to other crops, especially oilseeds. Reserve release and call prices should be based upon production costs of fully efficient producers.

- The target-price program should be specifically focused and designed solely on the conditions of the intended beneficiaries. The reserve and regular loan programs should continue to be available to all farmers.

—For the largest farmers, those with over \$200,000 in gross sales, the target price/deficiency payment program, if maintained, should be designed to provide a return that permits them to cover only shortrun costs; that is, serving solely as an income stabilizer, an "economic safety net." Income-increasing programs for these farmers are no longer needed; economic stability is essential and achievable through the reserve program and measures to counter weather related shocks.

—Target-price authorities should be modified so that the small- and medium-sized farm operators receive assistance sufficient to offset size-related disadvantages.

- Set-aside and diversion authorities, although not likely to be needed, could be maintained essentially with the flexibility they now possess, but should be tied firmly to soil-conservation objectives. Bid-diversion authorities could be used to help ensure this linkage.

- Agricultural land should be classed according to its use capability, and only land farmed in a manner consistent with its capability should be eligible for Federal programs.

- The disaster payments and emergency credit programs should be replaced by the newly enacted all-risk crop insurance program as soon as possible. This insurance program is subsidized, but the premiums can and must be tailored to the risk associated with the particular crop, on land of known production capability.

- The policies and programs for dairy, peanuts, and tobacco should be modified so that the advantages to large operations and abnormal rents to nonfarming landowners are eliminated.

### Agricultural Credit

The private money markets and institutions (including the Farm Credit System banks) have generally served agriculture well. In fact, studies suggest more credit funds might have been available to agriculture than would have been allocated by a purely competitive market. This might have contributed to inefficient resource allocation, inflation in land values, and further concentration of production and landownership.

Many limited-resource borrowers who are not being adequately served by private credit markets are potentially efficient and viable. Assisting them will contribute to the farm sector's longer-term strength. There appears little economic rationale for providing public credit to farms larger than the sizes needed for reasonable efficiency and adequate incomes.

Public credit policies which appear to be consistent with the several goals of food and agricultural policy include:

- Assuring that agriculture has competitive access to private capital markets at competitive rates. This would involve, on the supply side, assuring that financial rules and regulations are such that agriculture has fair access to the markets and, on the demand side, assuring that economic conditions and institutions in agriculture do not reduce agriculture's ability to compete in the capital markets.

- Augmenting the workings of private markets to pro-

vide direct loans and guaranteed loans specifically to limited-resource and beginning farmers who would not otherwise be able to compete for funds. This would involve refocusing the agricultural programs of the Farmers Home Administration on those who meet credible tests of need.

- Reducing the growing dependency of farmers on emergency credit. Efficiency and structural goals will be better served by shifting farmers to an actuarially sound disaster-insurance program.

### Land and Water Conservation

There can be little doubt that one of the most important tasks before us is maintaining the productive capability of our resource base over the long term. It is also clear that the market may fail to adequately reflect the full costs of resource use over the long run. Intensive production in response to temporary market signals may cause irreparable damage by severely reducing the resource base's productive capability at some future time.

The intensiveness with which resources are used is inextricably linked to the quality of the environment. Farming practices that seriously erode land reduce water quality; pesticides and chemical fertilizers are moved into streams; wildlife and their habitats are adversely affected, and the ecological balance is seriously altered. So, it is not only the present and future productive capacity of our resources that concerns us, it is the quality of the environment, the quality of life, for future generations as well.

This is an area in which the States should be urged to assume a greater role. Federal policy can provide broad directions, but programs more closely attuned to local needs and conditions are perhaps most appropriate.

Agricultural land should be classed according to its capacity, as a basis for all Federal programs, and conservation programs should use the same classification system. Our specific recommendations include:

- Greater and more careful targeting of Federal cost-share funds for conservation—targeting specifically to those areas and farms where the erosion and other resource problems are most severe.

- Land in the critically high erosion areas now used for crops must be shifted to a less intensive use. Measures must be taken to link Federal program benefits to the use of this land in the most socially desirable way.

- Eliminating aspects of Federal policy which encourage the irreversible conversion of prime agricultural lands to other uses.

- Obtaining legislation to allow more realistic pricing of water. Like energy, as long as water's price is not reflective of its value in use, conservation will be inadequate. Structural concerns should be addressed specifically in pricing policy. The original intent of legislation, to direct benefits to moderate-sized operations, should be maintained.



## Trade Policy

We have long sought to achieve a better balance between what our agriculture supplied and what the markets could absorb. Now that we seem to have achieved this goal, the pendulum shows signs of swinging too far. Our trade policy in the future will inevitably focus more and more on allocating limited supplies between domestic and foreign customers, either through restrictive export policies or higher prices.

The issues in this area are profound and likely to generate heated controversies. Nevertheless, the choices still confront us. Our general recommendation is that, in formulating agricultural trade policies and programs, full recognition be given to the fact that they will operate in an unstable, protectionist world market, making our less-protected domestic market extremely vulnerable to production and policy changes.

Our specific recommendations are:

- Clarify our policies with respect to the allocation of short supplies of agricultural commodities.
- Encourage a stronger system of internationally managed but nationally owned food reserves designed to stabilize world markets.
- Advocate strongly a more equitable international sharing of food-aid responsibilities by urging larger food-aid donations from traditional donor countries as well as the high-income food importing countries. Closely associated with this initiative would be a greater effort on our part to use a larger proportion of our food aid to alleviate emergency needs in the low-income developing countries.
- Focus more of our international development assistance on expanding indigenous food production and improving food-security facilities in the lowest-income developing countries.
- Focus our agricultural export-promotion programs and trade initiatives on those products that bring the least pressure on our resource base and which offer the highest value-added return to farmers and the general economy.

## Agricultural Labor

Programs for the farm sector have always been concerned with equity, mainly in relation to farm operators. Another participant group in the farm sector, long neglected and only recently gaining recognition, as it develops organizational and political strength, is farm labor. Once viewed solely as a production input, farm labor must in the future be accorded a higher priority in our policy concerns. This will require greater coordination of agricultural labor-related issues and programs among USDA, the Labor Department and other agencies with an interest in them.

Our recommendations in this area include:

- Reexamining the Labor Department's migrant and seasonal farmworker training programs with the objective of improving long-term planning and development activities essential to promoting more viable agricultural careers for farmworkers.
- Developing educational programs for employers, farm-labor contractors, worker organizations, and others to improve personnel-management practices in agriculture and develop less casual labor markets.
- Focusing a portion of USDA's rural-development activities on programs to enhance the stability of employment for seasonal agricultural workers in areas where their numbers are significant.
- Influencing the direction of research and development in agricultural technology and management to improve agricultural-employment conditions.
- Assuring that firms that are in compliance with the law are not competitively undercut by firms able to profit from unofficially sanctioned exemptions from the law.

## Research and Extension

Technological change has a major influence on the structure of agriculture. It is also an important source for improvement in welfare and living conditions. The question is not whether to support development of new technology, but rather how to better determine what types of technological development deserve public priority.

Increasing demand for agricultural products, increasing costs for energy and other inputs, natural-resource constraints, and changing social and personal values are all intensifying the demands on agricultural science. How these problems are approached scientifically will affect the technology and, in turn, the structure of agriculture. Recent patterns in defining problems have emphasized short-term, incremental developments which tend to facilitate or reinforce current structural trends, at the expense of alternatives that might fundamentally alter structure or structural relationships.

Our assessment of the probable future suggests that there is little to be gained for society in the continued displacement of either farm operators or farmworkers, and that underwriting this displacement therefore should not be a focus of publicly supported technological research and development. Beyond that point at which relative efficiency is achieved, such displacement does not increase the overall quantity of production nor does it improve the quality of food. It only allows one farmer to work a larger parcel of land, increasing the sector-wide incentive for growth and consolidation of farms. Agricultural research, therefore, should be increasingly directed to the particular problems of the small and medium-sized farms.



Our specific recommendations are:

- Reorientation of research and extension strategies to develop new technologies and approaches to reduce costs, increase efficiency and facilitate the economic viability of smaller and medium-sized farms to promote the maintenance of a diverse, resilient, and competitive agricultural system. The social and economic payoff from further development and promotion of labor-saving technology for the agricultural sector is limited.

- Research and extension programs should give greater attention to the problems of marketing, transporting, and processing the agricultural products of smaller farms. In this regard, many smaller farmers with limited funds could lower their input costs through organic farming practices but need further research to fully develop their operations' efficiency.

- The Federal Government, States, and the private sector should be mindful of the roles they play and the areas in which they have comparative research advantages. Improved planning, decision, and management systems for food and agricultural science—which give emphasis to long-term planning and funding horizons, improved coordination, and more pluralistic participation and problem-solving are needed. They are necessary to ensure that critical long-term problems are adequately addressed and that more balanced approaches are taken toward addressing the broadening social, economic, and environmental concerns affected by research and extension. Requirements include improved and more timely research and extension project-information systems, means to facilitate exchanges of public-private sector science planning information, and improved ways to assess impacts of technology on society.

- Research should reassess and offer alternatives to current chemical-, capital-, and energy-intensive strategies for enhancing U.S. agricultural productivity and efficiency. Fundamental long-term research, to find new paths to appropriate technological developments, is essential for successful adjustment to new pressures.

- Greater attention by food and agricultural science to the major deficiencies in our understanding of environmental, health, and nutritional hazards (and benefits) from food-production and processing practices.

### **The Fundamental Choice**

We have tried in this report to show some of the fundamental changes in our agricultural system and have argued that these changes offer us the opportunity—if not the obligation—to reexamine our policies and their effects on structure.

Our agriculture is today at a crossroads. The time of chronic surpluses is behind it; a time of growing demand and tighter supplies lies ahead. We are now presented with an opportunity for reflection and the choice of policies appropriate for guiding us to the end of the century. The choices before us

are not always between stark alternatives, as they often seemed to be in the past. We have seen, for example, that many smaller producers today do not necessarily have to choose between rural poverty or moving to the cities. Instead, many are able to stay in rural communities by combining farm and nonfarm incomes. Similarly, we as a society do not have to choose between efficiency—achieved in the past through farm consolidation—and stable farm numbers. We have largely realized the first goal and can now afford to devote more attention to the second.

Continuing existing policies and programs without change will almost certainly mean that present structural trends will continue. We will see continuing growth in farm sizes, further declines in farm numbers, greater economic vulnerability among our larger producers, and mounting resource-use problems.

It has become evident as this study progressed that powerful forces underlie the trends toward concentration, and to slow those trends will require major changes in our policies. More than a single change in a policy or program is necessary. Instead, it will require numerous changes across several areas, all of which must be more carefully coordinated and harmonized than ever before to avoid one offsetting the other. But, if the recommended changes in the tax code, commodity, credit, resource-conservation, research and other programs are made, there will be a slowing of the trend towards greater concentration and a better chance of realizing the broad set of goals. We are convinced that slowing this trend will be beneficial to our farmers and consumers, and in the best long-term interests of our Nation.

Government policies are not, of course, the only forces propelling current trends. But, they are among the most important and, realistically, among the few we can control. Failure to act will amount to a decision to allow the trends to extend into the future, regardless of how conditions may change, and regardless of the cost or inequity.

That will amount to a decision to accept greater and greater separation among the business functions of farming—ownership, management, labor, and operation—and greater concentration of landownership among fewer and fewer people, violating a long-held American principle and relegating the concepts behind “the family farm” to the status of museum relics.

# BIBLIOGRAPHY

Public meetings associated with the Structure Project were conducted in Montpelier, Vt., on Nov. 27, 1979; Fayetteville, N.C., Nov 28, 1979; Huntsville, Ala., Nov. 29, 1979; Sioux City, Iowa, Dec. 4, 1979; Sedalia, Mo., Dec. 5, 1979; Wichita Falls, Tex., Dec., 6, 1979; Denver, Colo., Dec. 11, 1979; Spokane, Wash., Dec. 12, 1979; Fresno, Calif., Dec. 13, 1979; Lafayette, Ind., Dec. 18, 1979; and Washington, D.C., April 29-30, May 1, and Oct. 30, 1980. Transcripts of these day-long meetings have been deposited with the National Agricultural Library, Beltsville, Md. Testimony from these meetings has been incorporated throughout this report.

*A Summary of Regional Meetings* has been published by the U.S. Department of Agriculture (September 1980) and a *Transcript of Washington Meetings* is being published in January 1981.

---

"Adjusting to Equilibrium in Agriculture." *Economic Report of the President, 1980*. United States Government Printing Office, Washington, D.C. January 1981.

*Agricultural Labor in 1980, Survey & Policy Recommendations*. Draft. William E. Myers, ed. From discussion and recommendations by a Select Agricultural Work Group for the Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. 1980.

Baker, Gladys L., Wayne D. Rasmussen, Vivian Wiser, and Jane M. Porter, *Century of Service: The First 100 Years of the United States Department of Agriculture*. U.S. Department of Agriculture, Washington, D.C. 1963.

Baker, Gladys L., et. al. *A History of the Agricultural Extension Service*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Baldock, David and Colin Hines. *A Review of Farm Structure Policies in OECD Countries Outside the USA*. Earth Resources Research, contracted report, Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. 1980.

Ball, Gordon A. and Earl O. Heady, eds. *Size, Structure, and Future of Farms*. Iowa State University Press, Ames. 1972.

Banks, Vera J. and Judith Kalbacher. "The Changing U.S. Farm Population." *Rural Development Perspectives*. March 1980.

Barkley, Paul. "Agrarianism, Beliefs, Values and Small Farms." National Rural Center's Small Farm Project. Lincoln. 1979.

Barkley, Paul. "Some Nonfarm Effects of Changes in Agricultural Technology." *American Journal of Agricultural Economics*. Vol. 60, pp. 309-315. 1978.

Barkley, Paul. "Some Possible Effects of Economic Security Taxes on the Structure of Agriculture in the United States." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Bass, P. and E. Kirshner. "Demographic, Economic and Fiscal Impacts of Alternative Westlands Reclamation Act Enforcement Scenarios." *American Journal of Agricultural Economics*. Vol. 60, No. 5. 1978.

Beale, Calvin L. "Recent U.S. Rural Population Trends and Selected Economic Implications." Statement before the Joint Economic Committee, United States Congress, Washington, D.C. May 1978.

Berry, Brian and H. Barnum. "Aggregate Patterns and Elemental Components of Central Place Systems." *Journal of Regional Science*. Vol. 4. 1965.

Berry, Wendell. *Culture and Agriculture*. Sierra Club Books, San Francisco. 1977.

Berry, Wendell. *The Unsettling of America*. Avon Books, New York. 1978.

Bieri, J., A. DeJanvry and A. Schmitz. "Agricultural Technology and the Distribution of Welfare Gains." *American Journal of Agricultural Economics*. Vol. 54, No. 5. 1972.

Bills, Nelson L. and Arthur Daugherty. *Who Owns the Land? A Preliminary Report for the Northeast States*. Staff Report NRED No. 80-8. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. 1980.

Blobaum, Roger. *The Loss of Agricultural Land*. Report to the Citizens Advisory Committee on Environmental Quality, Washington, D.C. 1974.

Bluestone, Herman. "Income Growth in Nonmetro America." Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Rural Development Research Report 14. 1970.



- Boehlje, Michael. "An Analysis of the Implications of Selected Income and State Tax Provisions on the Structure of Agriculture." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Boehlje, Michael and Charles Davenport. "The Effect of Tax Policy on the Structure of Agriculture." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Boehlje, Michael and Ken Krause. "Economic and Federal Tax Factors Affecting the Choice of a Legal Form of Business Organization." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Boehlje, Michael, Stephen Gabriel and John E. Lee, Jr. "Public Policy Toward Agricultural Credit." Paper presented at Symposium on Future Sources of Loanable Funds for Agricultural Banks, Kansas City Mo. December 1980.
- Boxley, Robert F. *Landownership Issues in Rural America*. Economic Research Service United States Department of Agriculture, Washington, D.C. ERS-655. 1979.
- Breimyer, Harold F. and Wallace Barr. "Issues in Concentration Versus Dispersion," *Who Will Control U.S. Agriculture?* Harold D. Guither, ed. University of Illinois, Champaign. 1972.
- Breimyer, Harold F. *Individual Freedom and the Economic Organization of Agriculture*. University of Illinois Press, Urbana. 1965.
- Brewster, David. "Historical Notes on Agricultural Structure." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.
- Brewster, John M. *A Philosopher Among Economists*. J.T. Murphy Printing Company, Philadelphia. 1970.
- Brookshire, David S. and Ralph C. D'Arge. "Adjustment Issues of Impacted Communities or, Are Boomtowns Bad?" *Natural Resources Journal*. Vol. 20, pp. 523-546. 1980.
- Brown, David L. and Calvin L. Beale. "Sociodemographic Diversity." *Understanding Nonmetropolitan America*. University of North Carolina Press, Chapel Hill. Forthcoming.
- Brown, David L. "Farm Structure and the Rural Community." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.
- Brown, Minnie M. and Olaf F. Larson. "Successful Black Farmers: Factors in Their Achievement." *Rural Sociology*. Vol. 44, No. 1, pp. 153-175. 1979.
- Burt, Lawrence A. and M. E. Wirth. "The Economic Consequences of Alternative Tax Reporting Methods on the Financial Growth of Pacific Northwest Farms." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Buttel, Frederick H. and Oscar W. Larson, III. "Farm Size, Structure, and Energy Intensity: An Ecological Analysis of U.S. Agriculture." Paper presented at Rural Sociological Society Meeting, San Francisco. 1978.
- Carlin, Thomas A. and Linda M. Ghelfi. "Off-Farm Employment and the Farm Sector." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.
- Carlin, Thomas A. and John C. Crecink. "Small-Farm Definition and Public Policy." *American Journal of Agricultural Economics*. Vol. 61, No. 5, pp. 933-939. 1979.
- Carlin, Thomas A. "Small Farm Component of U.S. Farm Structure." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.
- Carman, Hoy F. "The Estimated Impact of Orchard Development Cost Capitalization Provisions on California Orchard Development." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.
- Center for Rural Affairs. *Take Hogs, For Example*. Contracted report, Structure of Agriculture Project, Office of the Secretary. United States Department of Agriculture, Washington, D.C. September 1980.
- Clawson, Marion. *Policy Directions for U.S. Agriculture: Long-Range Choices in Farming and Rural Living*. Johns Hopkins University Press, Baltimore. 1968.
- Cochrane, Willard W. and Mary E. Ryan. *American Farm Policy, 1948-1973*. University of Minnesota Press, Minneapolis. 1976.



Cochrane, Willard. *The Development of American Agriculture*. University of Minnesota Press, Minneapolis. 1979.

Collins, Robert A. "An Analysis of the Impact of Federal Income Tax Laws on the Willingness of Various Classes of Landowners to Engage in Soil and Water Conservation Projects." United States Department of Agriculture, Washington, D.C. 1980.

Connor, John. "Manufacturing and Food Retailing." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.

Coughlin, Robert E. *Saving the Garden: The Preservation of Farmland and Other Environmentally Valuable Land*. National Science Foundation, Washington, D.C. 1979.

Crecink, John C. *Families with Farm Incomes: Their Income, Income Distribution, and Income Sources*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. November 1979.

Dahl, Dale C. "Public Policy Changes Needed to Cope with Changing Structure." *American Journal of Agricultural Economics*. Vol. 47, pp. 206-213. 1975.

Deaton, Brady J. and B. R. McManus, eds. *The Agrarian Tradition in American Society*. The Institute of Agriculture. University of Tennessee, Knoxville. 1976.

Deavers, Kenneth L. and David L. Brown. "Social and Economic Trends in Rural America." Rural Development Background Paper. The White House, Washington, D.C. October 1979.

DeBaal, J. Peter. *Foreign Ownership of U.S. Agricultural Land*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Agriculture Information Bulletin 440. 1980.

DeJanvry, A., E. Phillip LeVeen, and D. Runsten. *Mechanization in California Agriculture: The Case of Canning Tomatoes*. Report to the Project of the Instituto Interamericano de Ciencias Agrícolas—OEA and the Ford Foundation. September 1980.

Dewey, Richard. "The Rural-Urban Continuum: Real but Relatively Unimportant." *American Journal of Sociology*. Vol. 66, pp. 60-67. 1960.

Dideriksen, Raymond I., Allen R. Hidelbough and Keith O. Schmude. *Potential Cropland Study*. Soil Conservation Service. United States Department of Agriculture, Washington, D.C. Statistical Bulletin No. 578. 1977.

Doll, John P. and Richard Widdows. "A Critique of the Literature on U.S. Farmland Values." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Donaldson, G. F. and J. P. McInerney. "Changing Machinery Technology and Agricultural Adjustment." *American Journal of Agricultural Economics*. Vol. 55, pp. 829-839. 1973.

Duncan, Otis Dudley and Albert J. Reiss. *Social Characteristics of Urban and Rural Communities, 1950*. John Wiley & Sons, New York. 1956.

Ericksen, Milton H. and James D. Johnson. "Commodity Policy Issues for the 1980's." *Southern Journal of Agricultural Economics*. Vol. 12, No. 1. 1980.

*Farm Tenancy*. Report of the President's Committee, Washington, D.C. February 1937.

Farris, Paul L. "Alternatives and Consequences for Preserving the Family Farm." *Agricultural Science Review*. Third Quarter. 1968.

Fletcher, W. Wendell. *Agricultural Land Retention: An Analysis of the Issue, A Survey of Recent State and Local Farmland Retention Programs, a Discussion of Proposed Federal Legislation*. Congressional Research Service. Library of Congress, Washington, D.C. August 1978.

Flinn, William L. and Frederick H. Buttel. "Sociological Aspects of Farm Size: Ideological and Social Consequences of Scale in Agriculture." Paper presented at the American Agricultural Economics Association Meeting, Champaign, July 1980.

Floyd, John. "The Effects of Farm Price Supports on the Returns of Land and Labor in Agriculture." *Journal of Political Economy*. Vol. 73. 1965.

"Food and Agricultural Policy." *Economic Report of the President, 1978*. United States Government Printing Office, Washington, D.C. January 1978.

Freeman, Orville. *Agriculture In Transition*. Report to the President. Office of the Secretary, United States Department of Agriculture, Washington, D.C. January 1969.

Friedland, William H., Amy E. Barton and Robert J. Thomas. "Manufacturing Green Gold—The Conditions and Social Consequences of Lettuce Harvest Mechanization: A Social Impact Analysis." Department of Applied Behavioral Sciences, University of California, Davis. July 1978.

Fujimoto, Isao. "The Communities of the San Joaquin Valley: The Relation Between Scale of Farming, Water Use, and the Quality of Life." *Priorities in Agricultural Research of the U.S. Department of Agriculture-Appendix*. United States Senate, Subcommittee on Administrative Practices and Procedure of the Committee on the Judiciary. 95th Congress, 1st Session. United States Government Printing Office, Washington, D.C. 1978.

Fuller, Vardon. "The Supply of Agricultural Labor as a Factor in the Evolution of Farm Organization in California." Published Ph.D. dissertation. Department of Agricultural Economics, University of California, Berkeley. 1940.

Gardner, B. Delworth and Rulon D. Pope. *Structure and Scale in U.S. Agriculture*. Department of Agricultural Economics, University of California, Davis. Giannini Foundation Research Report No. 487. 1977.

Gates, Paul. "Public Land Disposal in California." *Agricultural History*. Vol. 69, No. 1. 1975.

Gertel, Karl and James A. Lewis. "Returns from Absentee Owned Farmland and Common Stock, 1940-79." *Agricultural Finance Review*. Vol. 40. 1980.

*Goals and Values in Agricultural Policy*. Iowa State University Center for Agricultural and Economic Adjustment. Iowa State University Press, Ames. 1961.

Goldman, George, Darryl L. McLeod, Anthony T. Nakazawa, and David H. Strong. *Economic Effect of Excess Land Sales in the Westlands Water District*. Division of Agricultural Sciences, University of California, Davis. Special Publication No. 3214. 1977.

Goldschmidt, Walter R. *As You Sow*. Allanheld, Osmun & Co., Montclair, N.J. 1978.

Goldschmidt, Walter R. "Reflections on Arvin and Dinuba." *Family Farm Antitrust Act of 1979*. United States Senate Subcommittee on Antitrust Monopoly and Business Rights of the Committee on the Judiciary. 96th Congress, 1st Session. United States Government Printing Office, Washington, D.C. 1980.

Goldschmidt, Walter R. "Small Business and the Community: A Study in the Central Valley of California on Effects of Scale of Farm Operations." *Report of Committee to Study Problems of American Small Business*. United States Senate. 79th Congress, 2nd Session. United States Government Printing Office, Washington, D.C. December 1946.

Grant, K. "Erosion in 1973-74: The Record and the Challenge." *Journal of Soil and Water Conservation*. January/February 1975.

Groenewegen, John R. and James Johnson. "Graduated Target Prices by Size of Operation." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Groenewegen, John R. and Jerry A. Sharples. "U.S. Grain Reserves in Perspective." *Agricultural Food Policy Review*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Guither, Harold D., ed. *Who Will Control U.S. Agriculture?* College of Agriculture, University of Illinois, Urbana. Special Publication No. 27. 1972.

Guither, Harold D. *The Food Lobbyists: Behind the Scenes of Food and Agri-Politics*. Lexington Books, Lexington. 1980.

Gulley, James L. *Beliefs and Values in American Agriculture*. Economic Research Service, United States Department of Agriculture, Washington, D.C. 1974.

Gustafson, Gregory C. *Who Owns the Land? A Preliminary Report for the West States*. Staff Report. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. NRED No. 80-12. 1980.

Hall, Bruce F. and E. Phillip LeVeen. "Farm Size and Economic Efficiency: The Case of California." *American Journal of Agricultural Economics*. Vol. 60, No. 4. 1978.

Hall, Bruce F. "An Economic Analysis of Multiple Job Holding by Farm Operators." Unpublished Ph.D. dissertation. Department of Agricultural and Resource Economics, University of California, Berkeley. 1978.

Harl, Neil. "Agriculture Structure and Corporations—Economics and Emotions." *Corporate Farming and the Family Farm*. Iowa State University Press, Ames. 1970.

Harl, Neil and Michael D. Boehlje. "Structural Implications of Income and Estate Tax Regulations With Respect to the Ownership and Use of Farmland and the Corporate Form of Business Entity." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Harl, Neil. "Influencing the Structure of Agriculture Through Taxation." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. October 1980.

Harrington, David H. "Perspectives on the Economic and Structural Change in U.S. Agriculture." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.

Harrison, Gerald and others. "Income Taxes and Farm Structure." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Hart, Albert Bushnell, ed. "National Ideals Historically Traced, 1607-1907." *The American Nation*. Vol. 26. Harper, New York. 1904-1918.

Hathaway, Dale E. and A. Waldo. "Multiple Jobholding by Farm Operators." Department of Agricultural Economics, Michigan State University, Ann Arbor. Agricultural Experiment Station Research Bulletin No. 5. 1964.

Hathaway, Dale E., J. Allan Beegle and W. Keith Bryant. *People of Rural America*. United States Department of Commerce, Washington, D.C. 1968.

Heady, Earl O. and Stephen T. Sonka. "Farm Size, Rural Community Income and Consumer Welfare." *American Journal of Agricultural Economics*. Vol. 56, No. 3, pp. 534-542. 1974.

Heady, Earl O. "Public Policies in Relation to Farm Size and Structure." *South Dakota Law Review*. Vol. 23. 1978.

Heffernan, William D. "Sociological Dimensions of Agriculture Structures in the United States." *Sociologia Ruralis*. Vol. 12, pp. 481-499. 1972.

Hightower, Jim and Susan DeMarco. *Hard Tomatoes, Hard Times*. Schenkman Publishing Company, Cambridge. 1973.

Hjorth, Roland L. "The Effect of the Federal Tax Structure Upon the Ability of Farmers to Purchase Agricultural Land." Paper presented at the Federal Taxation and Structure of Agriculture Seminar. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. October 1980.

Holland, David. "Production Efficiency and Economies of Size in Agriculture." College of Agriculture, Washington State University, Pullman. Scientific Paper No. 5266. 1979.

Hoppe, Robert. "Agriculturally Dependent Counties." A Literature Review in Agriculture and Rural America. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Hughes, Dean W. "An Overview of Farm Sector Capital and Credit Needs in the Eighties." *Agricultural Finance Review*. Forthcoming.

Hughes, Dean W., Stephen Gabriel, et. al. *Financing the Farm Sector in the 1980's: Aggregate Needs and the Roles of Public and Private Institutions*. Report prepared for the Office of the Secretary. United States Department of Agriculture, Washington, D.C. December 1980.

Jamieson, J. "Marketing Orders and Public Policy for the Fruit and Vegetable Industries." *Food Research Studies in Agricultural Economics, Trade and Development*. Vol. 10, No. 3. 1971.

Jesse, Edward V. "Thin Markets for Agricultural Products: Causes, Effects and Public Policy Options." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. September 1980.

Johnson, James D. "New Policy Direction and Farm Structure." Speech given at the Symposium on Farm Structure and Rural Policy, Iowa State University, Ames. October 1980.

Jones, DeWitt. "Farm and Nonfarm Uses of Farm Family Resources: Impact on Farm and Total Farm Family Income." Paper presented at the National Rural Center Conference on Small Farms, Lincoln. February 1979.

Jordan, Max and Tom Hady. "Agriculture and the Changing Structure of the Rural Economy." *Structure Issues of American Agriculture*. Economics, Statistics and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.



Just, Richard, A. Schmitz and D. Zilberman. "The Social Impact of Technological Change in Agriculture." *Technological Change, Farm Mechanization and Agricultural Employment*. Division of Agricultural Sciences, University of California, Berkeley. Publication No. 4085. July 1978.

Justus, Fred and J. C. Headley. *The Management Factor in Farming: An Evaluation and Summary of Research*. Minnesota Agricultural Experiment Station, Minneapolis. Technical Bulletin No. 258. March 1968.

Kain, John and Joseph Persky. "The North's Stake in Southern Rural Poverty." *Rural Poverty*. Report of the President's National Commission on Rural Poverty, Washington, D.C. May 1968.

Keene, John C. *Untaxing Open Space: An Evaluation of the Effectiveness of Differential Assessment of Farm and Open Space Land*. United States Government Printing Office, Washington, D.C. 1976.

Krause, K. and H. Shapiro. "Tax Induced Investment in Agriculture: Gaps in Research." *Agricultural Economics Research*. Vol. 26. January 1964.

Krause, Kenneth R. and Leonard R. Kyle. "Economic Factors Underlying the Incidence of Large Farming Units." *American Journal of Agricultural Economics*. Vol. 52, No. 5, pp. 748-761. 1970.

Kravitz, Linda. *Who's Minding the Coop? Agribusiness Accountability Project*, Washington, D.C. 1974.

Kyle, Leonard R., W. B. Sundquist and Harold D. Guither. "Who Controls Agriculture Now—The Trends Underway." *Who Will Control U.S. Agriculture?* Harold D. Guither, ed. University of Illinois, Champaign. 1972.

Lee, John E., Jr. "A Framework for Formulating Food Policy." *Southern Journal of Agricultural Economics*. Vol. 12, No. 1, pp. 1-10. 1980.

Lee, John E., Jr. and Dean W. Hughes. "Capital Needs in Agriculture in the 1980's." Paper presented at Conference on Financing Agriculture in the 1980's, Minneapolis. September 1980.

Lee, Linda K. *A Perspective on Cropland Availability*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Report No. 406. 1978.

LeVeen, E. Phillip and D. McLeod. "American Agricultural Policy in an Inflationary Era." Unpublished working paper. Department of Agricultural and Resource Economics, University of California, Berkeley. 1978.

LeVeen, E. Phillip and George E. Goldman. "Reclamation Policy and the Water Subsidy: An Analysis of the Distributional Consequences of Emerging Policy Choices." *American Journal of Agricultural Economics*. Vol. 60, pp. 929-934. 1978.

LeVeen, E. Phillip and Robert Stavins. "The Economic Consequences of U.S. Agrarian Structural Change: A Critical Review of the Literature." Contracted Report, Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. November 1980.

LeVeen, E. Phillip. "Public Policy and the Future of the Family Farm." Mimeograph. University of California, Berkeley. 1973.

Lewis, Douglas G. *Who Owns the Land? A Preliminary Report for the Southern States*. Staff Report. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. NRED No. 80-12. 1980.

Lewis, James A. *Landownership in the United States, 1978*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Agricultural Information Bulletin No. 435. 1980.

Lewis, James A. *White and Minority Small Farm Operators in the South*. Economic Research Service, United States Department of Agriculture, Washington, D.C. AER No. 353. 1976.

Lin, William, George Coffman and J. B. Penn. *U.S. Farm Numbers, Sizes and Related Structural Dimensions: Projections to the Year 2000*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Technical Bulletin No. 1625. 1980.

Lin, William, James Johnson and Linda Calvin. "Distribution of Farm Program Payments: Do Payment Limitations Make Any Difference?" Paper presented to the American Agricultural Economics Association Annual meeting, Urbana. July 1980.

Lin, William, James Johnson and Linda Calvin. "Farm Commodity Programs: Who Participates and Who Benefits." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Lins, David A. and Peter J. Barry. "Availability of Financial Credit as a Factor of Structural Change in the U.S. Farm Production Sector." United States Senate, Committee Print. Committee on Agriculture, Nutrition and Forestry. April 1980.

Little, Charles E. *Land and Food: The Preservation of U.S. Farmland*. American Land Forum, Washington, D.C. 1979.

Lu, Yao-Chi, Philip Cline and Leroy Quance. *Prospects for Productivity Growth In U.S. Agriculture*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. AER No. 435. 1975.

MacCannell, Dean. "Report on Current Social Conditions in the Communities in and Near the Westlands Water District." Mimeograph. University of California, Davis. 1980.

Madden, J. Patrick. "Agricultural Mechanization and the Family Farm—Some Social and Economic Considerations." Department of Agricultural Economics and Rural Sociology, Pennsylvania State University, University Park. 1979.

Madden, J. Patrick and E. J. Parterheimer. "Evidence of Economies and Diseconomies of Farm Size." *Size, Structure and Future of Farms*. Earl O. Heady and Gordon A. Ball, eds. Iowa State University Press, Ames. 1972.

McConnell, Grant. *The Decline of Agrarian Democracy*. University of California Press, Berkeley and Los Angeles. 1953.

McMartin, Wallace, Virgil Whetzel and Paul R. Myers. "Resources at Risk: Coal Development and Rural America." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Melichar, Emanuel. "Capital Gains Versus Current Income in the Farming Sector." *American Journal of Agricultural Economics*. Vol. 61, No. 5, pp. 1085-1092. 1979.

Michaels, Gregory H. and Gerald Marousek. *Economic Impact of Farm Size Alternatives on Rural Communities*. University of Idaho, Moscow. Agricultural Experiment Station Bulletin No. 582. 1978.

Milk, Richard. "The New Agriculture in the U.S.: A Dissenter's View." *Land Economics*. Vol. 68, No. 3, pp. 228-239. 1972.

Miller, James P. *Nonmetro Growth and Locational Change in Manufacturing Farms*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. RDRR No. 24. 1980.

Miller, Thomas A. "Economies of Size and Other Growth Incentives." *Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.

Miller, Thomas A. "Economies of Size, Structural Change, and the Impact of a Family Farm Policy." Paper presented at the Western Agricultural Economics Association Annual Meeting, Las Cruces. July 1980.

Miller, Thomas A., Gordon E. Rodewald and Robert McElroy. "Economies of Size in Major Field Crop Farming Regions of the United States." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Moles, Jerry A. "Structure and Meaning in American Agriculture." Unpublished paper presented at Symposium on Farm Structure and Rural Policy, Iowa State University, Ames. October 1980.

Moles, Jerry A. "Who Tills the Soil? Mexican-American Farm Workers Replace the Small Farmer in California: An Example from Colusa County." Western Rural Development Center, Oregon State University, Corvallis. Discussion Paper No. 7. March 1976.

Moore, Charles V. "Economies Associated with Farm Size, Fresno County Cotton Farms." California Agricultural Experiment Station. Giannini Foundation Research Report No. 285. 1965.

Moore, Charles V. "The U.S. Department of the Interior's Proposed Rules of Enforcement of the Reclamation Act of 1902: An Economic Impact Analysis." Staff Report. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. ESCS-04. 1980.

Morrison, Denton E. and Allan Steeves. "Deprivation, Discontent, and Social Movement Participation: Evidence on a Contemporary Farmers' Movement, the NFO." *Rural Sociology*. Vol. 32, pp. 414-434. 1967.

Moyer, D. David. *Who Owns the Land? A Preliminary Report for the Central States*. Staff Report. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. NRED No. 80-11. 1980.

Myers, William E. *Some Reflections on Agricultural Employment*. Supplement to *Agricultural Labor in 1980, Survey & Policy Recommendations*, draft report of the Select Agricultural Work Group. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. 1980.



National Agricultural Research and Extension Users Advisory Board. *Report*. Washington, D.C. October 1980.

National Commission on Food Marketing. *Food From Farmer to Consumer*. United States Government Printing Office, Washington, D.C. 1966.

National Farm Institute. *Corporate Farming and the Family Farm*. Iowa State University Press, Ames. 1970.

National Rural Center, Energy Committee. "Energy and Small Farms: A Review of Existing Literature and Suggestions Concerning Further Research." Washington, D.C. November 27, 1978.

Nikolitch, Radoje. "The Individual Family Farm." *Size, Structure and Future of Farms*. Earl O. Heady and Gordon A. Ball, eds. Iowa State University Press, Ames. 1972.

O'Brien, Patrick. "World Economic and Agricultural Setting for the 1980's." Perspectives Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. 1980.

Olsen, Alfred J. "Taxes and Agriculture: Some Observations" Paper presented at the Federal Taxation and the Structure of Agriculture Seminar. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. October 1980.

Owen, W. F. "The Double Developmental Squeeze on Agriculture." *American Economic Review*. Vol. 66, No. 3. 1966.

Paarlberg, Don. *Farm and Food Policy: Issues of the 1980's*. University of Nebraska Press, Lincoln. 1980.

Paul, Allen B., Robert W. Bohall and Gerald E. Plato. "Farmers' Access to Markets." Staff Paper. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. September 1980.

Penn, J. B. "Agricultural Economic Developments in the 1970's." *Food and Agriculture Policy*. American Enterprise Institute, Washington, D.C. Forthcoming.

Penn, J. B. "The American Farm Sector and Future Public Policy: An Economic Perspective." *Agricultural-Food Policy Review*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Perelman, Michael. "The Demise of Efficiency: The Perverse Economics of United States Agriculture." Department of Economics, Chico State University, Chico. 1979.

Peterson, Trudy Huskamp. *Agricultural Exports, Farm Income, and the Eisenhower Administration*. University of Nebraska Press, Lincoln. 1979.

Prinzinger, Barbara Claffey. "Patenting Life Forms: Issues Surrounding the Plant Variety Protection Act." Paper prepared for the Southern Agricultural Economics Association meeting, Atlanta. February 1981.

Rasmussen, Wayne D. and Gladys L. Baker. "The Farmer Speaks for a Way of Life." *Contours of Change*. United States Department of Agriculture, Washington, D.C. 1970.

Bowers, Douglas E. *The Social and Political Setting for the 1981 Farm Bill*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Raup, Philip M. "Corporate Farming in the United States." *Journal of Economic History*. Vol. 33, No. 1. 1973.

Raup, Philip M. "Nature and Extent of the Expansion of Corporations in American Agriculture." Staff Paper. Department of Agricultural and Applied Economics, University of California, Berkeley. April 1975.

Raup, Philip M. "Some Questions of Value and Scale in American Agriculture." *American Journal of Agricultural Economics*. Vol. 60, pp. 303-308. 1978.

Raup, Philip M. "Urban Threats to the Rural Lands: Background and Beginnings." *Journal of the American Institute of Planners*. November 1975.

Reimund, Donn A., J. Rod Martin and Charles V. Moore. "Structural Changes in Agriculture: The Experience for Broilers, Fed Cattle, and Processing Vegetables." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Reynolds, Thomas, Earl O. Heady and Donald O. Mitchell. "Alternative Futures for American Agricultural Structure, Policies, Income, Employment, and Exports: A Recursive Simulation." Center for Agricultural and Rural Development, Iowa State University, Ames. CARD Report No. 56. 1975.

Ridenour, Philip. "Federal Income Taxation and the Trend Toward Family Farm Corporations." Paper presented at the Federal Taxation and the Structure of Agriculture Seminar. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. October 1980.



Rodefeld, Richard D., Jan Flora, Donald Voth, Isao Fujimoto and Jim Converse, eds. *Change in Rural America: Causes, Consequences and Alternatives*. C. V. Mosby, St. Louis. 1978.

Rowe, Gene. *The Hired Farm Working Force of 1977*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 437. 1978.

Schertz, Lyle P. and others. *Another Revolution in U.S. Farming?* Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. AER No. 441. December 1979.

Schertz, Lyle P. "Inflation: A Food and Agriculture Perspective." Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

Schmitz, Andrew and David Seckler. "Mechanized Agriculture and Social Welfare: The Case of the Tomato Harvester." *American Journal of Agricultural Economics*. Vol. 52, pp. 569-577. November 1970.

Seckler, David and R. A. Young. "Economic and Policy Implications of the 160-Acre Limitation in Federal Reclamation Law." *American Journal of Agricultural Economics*. Vol. 60, No. 4. November 1978.

Seckler, David William. "Why Corporate Farming?" *Corporation Farming: What Are the Issues?* Department of Agricultural Economics, University of Nebraska, Lincoln. Report No. 53, pp. 23-27. 1969.

Short, Sara D. "Concentration of 1978 Deficiency Payments." Paper presented at the Southern Agricultural Economics Association meetings, Atlanta. February 1981.

Sisson, Charles. "The U.S. Tax System and the Structure of American Agriculture." Paper presented at the National Rural Center Conference on Small Farms, Lincoln. February 1979.

Smith, Leslie Whitener and Gene Rowe. *Food Stamp Participation of Hired Farmworker Families*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 403. 1978.

Smith, Leslie Whitener and Robert Coltrane. *Agricultural Labor Needs in the 1980's*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. 1980.

Smith, T. Lynn. "A Study of Social Stratification in the Agricultural Sections of the U.S.: Nature, Data, Procedures and Preliminary Results." *Rural Sociology*. Vol. 34, pp. 497-510. 1969.

Stam, Jerome M. and Ann G. Sibold. *Agriculture and the Property Tax*. United States Department of Agriculture, Washington, D.C. AER No. 392. 1978.

Stanton, Bernard F. "Perspective on Farm Size." Presidential address delivered to the American Association of Agricultural Economics, Blacksburg, Va. 1978.

State of California. *The Family Farm in California*. Report of the Small Farm Viability Project, Sacramento. 1977.

*Status of the Family Farm*. First Annual Report to the Congress. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. Committee Print. United States Senate Committee on Agriculture, Nutrition and Forestry. 1979.

*Status of the Family Farm*. Second Annual Report to the Congress. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 434. September 1979.

*Status of the Family Farm*. Third Annual Report to the Congress. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Forthcoming.

*Structure Issues of American Agriculture*. Economics, Statistics, and Cooperatives Service, United States Department of Agriculture, Washington, D.C. AER No. 438. November 1979.

*The People Left Behind*. The President's National Advisory Commission on Rural Poverty. United States Government Printing Office, Washington, D.C. 1967.

"The Revolution in American Agriculture." *National Geographic Magazine*. February 1970.

Thompson, Allen R. and Michael Green. *The Status of Minority Farms in the United States, 1974*. Staff Report. Economics and Statistics Service. United States Department of Agriculture, Washington, D.C. AER No. 80-14. 1980.

Till, T. "The Extent of Industrialization in Southern Nonmetro Labor Markets in the 1960's." *Journal of Regional Economics*. Vol. 13, No. 3.

Timmons, John. "Agriculture's Natural Resource Base: Demand and Supply Interactions, Problems, and Remedies." Speech presented at the National Conference on Soil Conservation Policies, Washington, D.C. November 1979.

Tweeten, Luther and T. Nelson. "Sources and Repercussions of Changing U.S. Farm Real Estate Values." Agriculture Experiment Station, Stillwater. Technical Bulletin No. T-120. 1966.

Tweeten, Luther and Wallace Huffman. "Structural Change: An Overview." Project on a research agenda for small farms. National Rural Center, Washington, D.C. January 1979.

Tweeten, Luther. "Food and Agricultural Policy." Paper presented at a symposium sponsored by the American Enterprise Institute for Public Policy Research, Washington, D.C. 1977.

United States Congressional Budget Office. "Corporations in Farming." *Family Farm Antitrust Act of 1979*. United States Senate Subcommittee on Antitrust, Monopoly and Business Rights of the Committee on the Judiciary. 96th Congress, 1st Session. United States Government Printing Office, Washington, D.C.

United States Congressional Budget Office. *Public Policy and the Changing Structure of American Agriculture*. United States Government Printing Office, Washington, D.C. August 1978.

United States Department of Agriculture. *A Dialogue on the Structure of American Agriculture: Summary of Regional Meetings, November 27-December 18, 1979*. Structure of Agriculture Project, Office of the Secretary. Washington, D.C. September 1980 (revised).

United States Department of Agriculture. *After a Hundred Years (The Yearbook of Agriculture, 1962)*. United States Government Printing Office, Washington, D.C. 1962.

United States Department of Agriculture. *Changes in Farm Production and Efficiency, 1978*. Economics and Statistics Service, Washington, D.C. Statistical Bulletin 628. January 1980.

United States Department of Agriculture. "Focus on Rural Poverty." *Rural Development Perspectives, No. 2*. Economics, Statistics, and Cooperatives Service, Washington, D.C. March 1980.

United States Department of Agriculture. *Monitoring Foreign Ownership of U.S. Real Estate: A Report to the Congress*. United States Government Printing Office, Washington, D.C. 1980.

United States Department of Agriculture. *Our Land and Water Resources, Current and Prospective Supplies and Uses*. Economic Research Service, Washington, D.C. Miscellaneous Publication No. 1290. May 1974.

United States Department of Agriculture. "Resource Conservation Act Appraisal 1980." Economics and Statistics Service. Washington, D.C. Forthcoming.

United States Department of Agriculture. *Transcript of Proceedings, Washington, D.C. Hearings held April 29-May 1, 1980*. Structure of Agriculture Project. Office of the Secretary. Washington, D.C. January 1981.

United States Department of Agriculture, United States Department of Interior, and Environmental Protection Agency. "Irrigation Water and Use and Management." An interagency taskforce report. Washington, D.C. June 1979.

United States Department of Agriculture. *Who Owns the Land? A Preliminary Report of a U.S. Landownership Survey*. Economics, Statistics, and Cooperatives Service. Washington, D.C. January 1981.

United States Department of Commerce, Bureau of the Census. *1974 Census of Agriculture*. Vol. IV. Special Reports Part 5. Corporations in Agricultural Production. Washington, D.C. November 1978.

United States Department of Commerce, Bureau of the Census. *Farm Population of the United States*. Current Population Reports, Series P-27, No. 53. September 1980.

United States Department of Commerce, Bureau of the Census. *Farm Population of the United States: 1978*. Washington, D.C. September 1979.

United States Department of the Interior. *Interim Report on Acreage Limitation*. Water and Power Resources Service, Washington, D.C. March 1980.

United States Federal Trade Commission. "On the Influence of Market Structure on the Profit Performance of Food Manufacturing Companies." Economic Report. Washington, D.C. September 1969.

United States General Accounting Office. *Changing Character and Structure of American Agriculture: An Overview*. Washington, D.C. 1979.

United States Senate Committee on Agriculture and Forestry. Record of hearings on long-range agricultural policy. United States Government Printing Office, Washington, D.C., pp. 6-10. 1948.

United States Senate Committee on Agriculture, Nutrition and Forestry. *Farm Structure: A Historical Perspective on Changes in the Number and Size of Farms*. Committee Print. 96th Congress, 2nd Session. United States Government Printing Office, Washington, D.C. April 1980.

United States Senate Select Committee on Small Business and the Committee on Interior and Insular Affairs. *Will the Family Farm Survive in America?* 94th Congress, 2nd Session, Parts 1 and 3. United States Government Printing Office, Washington, D.C. July 1975 and February 1976.

United States Senate Subcommittee on Migratory Labor of the Committee on Labor and Public Welfare. *Farmworkers in Rural America, 1971-1972*. 92nd Congress, 1st and 2nd Sessions, Parts 3A, 3B, 3C and 5A. United States Government Printing Office, Washington, D.C. November 1971 and January 1972.

United States Senate Subcommittee on Monopoly of the Select Committee on Small Business. *Corporation Farming*. 90th Congress, 2nd Session. United States Government Printing Office, Washington, D.C. May and July 1968.

United States Senate Subcommittee on Monopoly of the Select Committee on Small Business. *Role of Giant Corporations*. 92nd Congress, 1st and 2nd Sessions, Parts 3, 3A and 3B. United States Government Printing Office, Washington, D.C. November/December 1971 and March 1972.

Walter, Alan S., James Johnson, *et. al.* "Prohibiting Commodity Program Payments to Nonfarm Corporations and Partnerships." Staff Paper. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. June 1979.

West, Jerry G. "Agricultural Economics Research and Extension Needs of Small Scale, Limited Resource Farmers." *Southern Journal of Agricultural Economics*. Vol. 11, No. 1. 1979.

Wile, Philip H. "Federal Tax Laws and the Structure of Agricultural Operations." Paper presented at the Federal Taxation and Structure of Agriculture Seminar. Structure of Agriculture Project, Office of the Secretary, United States Department of Agriculture, Washington, D.C. October 1980.

Wilkinson, Kenneth P. "Consequences of Decline and Social Adjustment to It." *Communities Left Behind: Alternatives for Development*. Larry R. Whiting, ed. Iowa State University Press, Ames. 1974.

Wunderlich, Gene. *Facts About U.S. Landownership*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. Information Bulletin No. 422. 1979.

Ziemetz, Kathryn A. *Growing Energy: Land for Biomass Farms*. Economics and Statistics Service, United States Department of Agriculture, Washington, D.C. AER No. 425. 1979.



## AUTHORS AND CONTRIBUTORS

Bob S. Bergland, *Secretary of Agriculture*

Susan E. Sechler, *Project Coordinator, Deputy Director, Office of Economics, Policy Analysis and Budget*

*Project Staff:* Brian B. King, Joseph Belden, Susan DeMarco, Beverly Ganley, and J. Gibson Edwards (design and production).

### Research and Technical Assistance

*Economics and Statistics Service, USDA:* Barbara Claffey, Kenneth Clayton, Kenneth L. Deavers, John Groenewegen, David H. Harrington, James D. Johnson, John E. Lee, Jr., Patrick M. O'Brien, J.B. Penn, Donn A. Reimund, Richard Rizzi, Felix Spinelli, and Lyle P. Schertz, Vicky Smith.

*Office of Budget, Planning and Evaluation, USDA:* John Fedkiw, Lynn Maish, and Arnold Miller.

*Farmers Home Administration, USDA:* Richard W. Long.

*Science and Education Administration, USDA:* James Meyers.

*Consultants to the Project:* David Baldock, Michael Boehlje, Charles Davenport, Jack Doyle, Frances Hill, Colin Hines, James Holt, E. Phillip LeVeen, William E. Meyers, Robert Stavins, and Martin Strange.

---

*Reviewers:* Emerson M. Babb, David E. Brewster, Howard W. Hjort, Janet Keyser, Pamela Mayall, William Motes, Cliff Ouse, Elizabeth Webber, and James C. Webster.

---

---

Contributions of ideas and materials also were made by Don Paarlberg, Willard Cochrane, Jack Keyser, John Obert, Dean MacCannell, Isao Fujimoto, Philip M. Raup, William D. Heffernan, and Harold F. Breimyer.

---

The public meetings for this project were organized by, in addition to the staff named above, Garry South, Karen Voight, Susan McCaskill, Nancy Rubin, Patricia Stolfa, Ovid Bay, Joseph McDavid, and Robert W. Norton. Particular thanks are owed to the 575 speakers at the regional meetings, the panelists at the Washington meetings, and the thousands of others who attended the meetings and/or mailed their opinions and suggestions to the Secretary during the last two years.

Special thanks also are due to Tricia Pennington, Karen Boggs, MonaCheri Clarke, Corless Hamm, Bernice D. Jefferson, and Vickie Price; to David Sutton and Jan Proctor of the Design Center, and Al Senter and Joseph Stanton of the Printing Center, Office of Governmental and Public Affairs.



